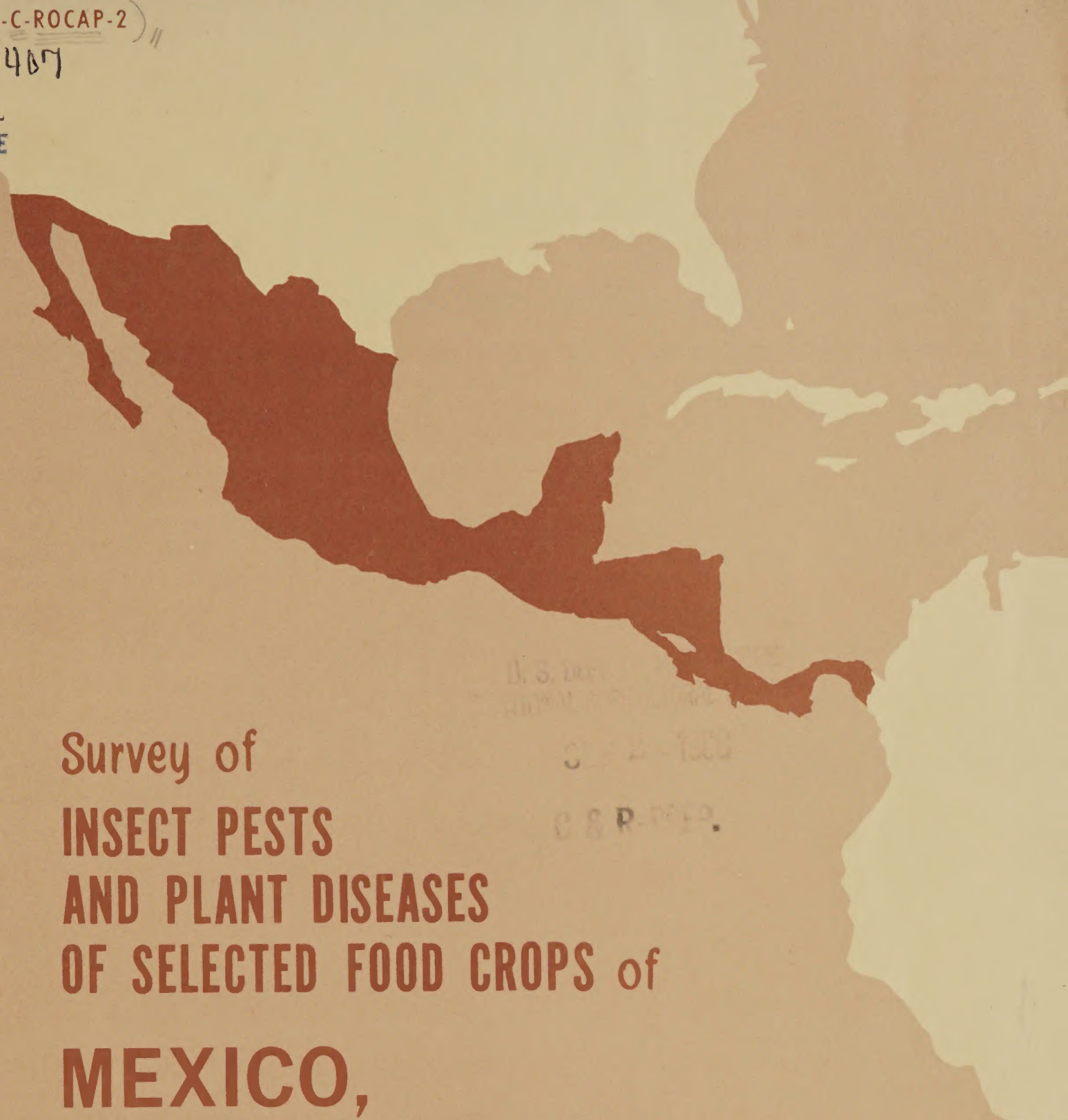


Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

72 IADS-C-ROCAP-2)
AHD 1407
• A32
RESERVE



Survey of
**INSECT PESTS
AND PLANT DISEASES
OF SELECTED FOOD CROPS of
MEXICO,
CENTRAL AMERICA
AND PANAMA**

International Agricultural Development Service / Agricultural Research Service

U.S. DEPARTMENT OF AGRICULTURE / Cooperating with AGENCY FOR INTERNATIONAL DEVELOPMENT

OCTOBER 1967

³ SURVEY OF
INSECT PESTS AND PLANT DISEASES
OF SELECTED FOOD CROPS
OF MEXICO, CENTRAL AMERICA AND PANAMA, ⁺

^{3a} by

Judson U. McGuire, Jr.
Entomologist
Agricultural Research Service

and

Bowen S. Crandall,
Pathologist
Agricultural Research Service

^{5b}

International Agricultural Development Service,
Agricultural Research Service

UNITED STATES DEPARTMENT OF AGRICULTURE // OCTOBER 1967 ^{5c}
cooperating with AGENCY FOR INTERNATIONAL DEVELOPMENT

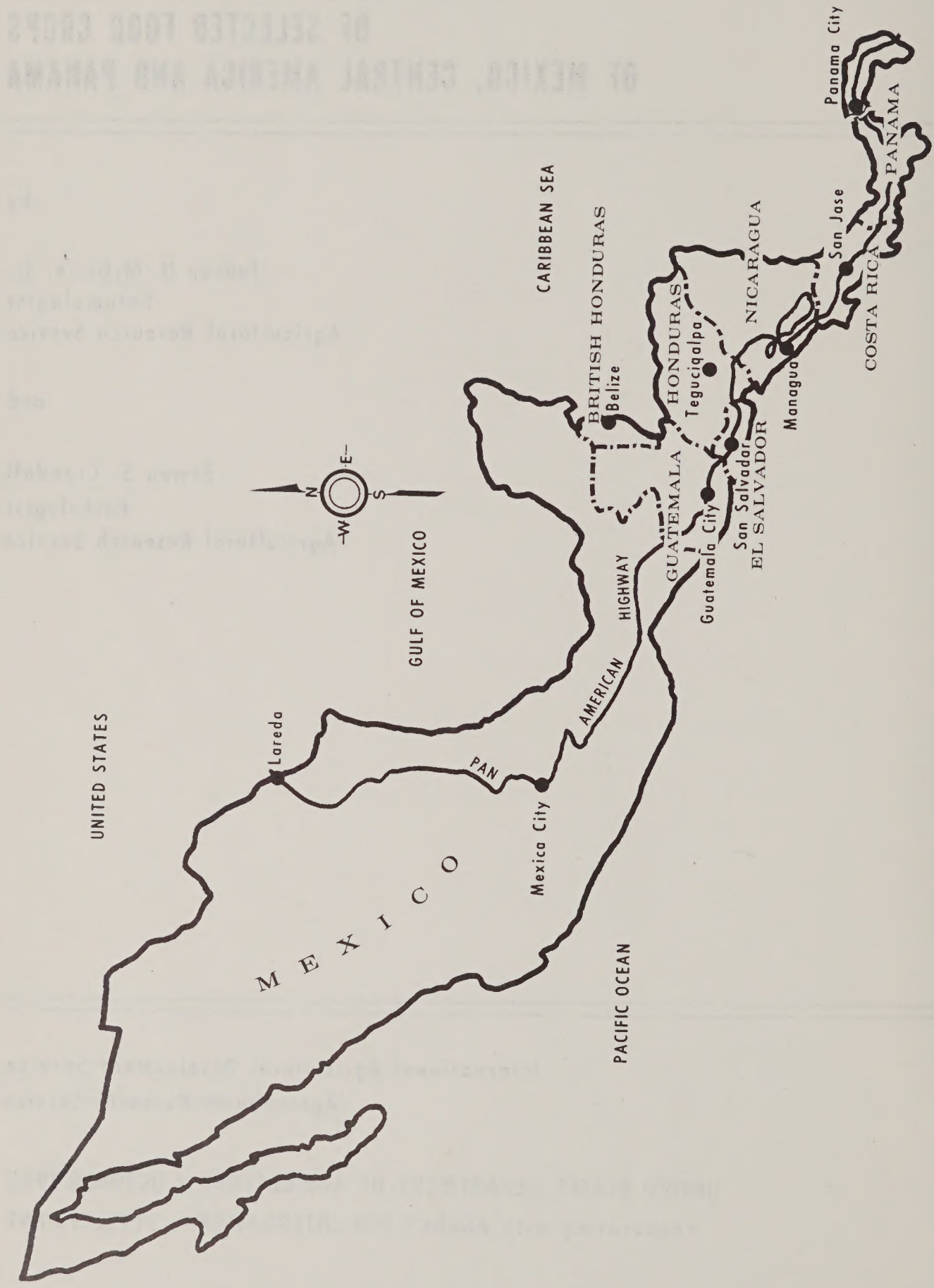


TABLE OF CONTENTS

	<u>Page</u>
Introduction	1
Reasons for the Survey	1
Objectives of the Survey	3
The Insect Lists	4
Diseases of a Selected Group of the Economically Important Crops of Central America	10
Factors to be Modified in Order to Improve Entomological and Pathological Know-How in Central America and Panama	11
Appendix I - Losses Due to Insects on Some Crops in Central America and Panama	23
Appendix II - A General List of Insect Pests of a Selected Group of Economically Important Crops of Central America	25
Appendix III - General List of Insects	55
Appendix IV - Phylum, Class, Order, and Family Names	107
Appendix V - A Checklist of the Diseases of a Selected Group of the Economically Important Crops of Central America	117
Summary of Loss Leaders from Checklist of Diseases of Central American Economically Important Crops	153

SURVEY OF INSECT PESTS AND PLANT DISEASES OF SELECTED CROPS OF MEXICO, CENTRAL AMERICA AND PANAMA

BY

Judson U. McGuire, Jr., Entomologist and
Bowen S. Crandall, Pathologist 1/

At the request of the Agency for International Development, the writers were assigned to carry out the survey under the terms of an Agreement 2/ with the Regional Office for Central America and Panama (ROCAP) and the U. S. Department of Agriculture.

The work, originally expected to start May 1965, could not be undertaken until December of that year. The termination date, June 30, 1966, however, remained the same.

In effect, this eliminated any real opportunity to make crop surveys or check existing checklist --disease-identifications in the field. It channeled the bulk of the "survey" into a direct-contact meeting with technicians and an evaluation of existing checklists, notes, and laboratory records.

When the first proposals were made the technicians pointed out that the time allowed was either too short or too long. Too short for a field survey, even on a limited group of crops, and too long to meet the local pathologists and entomologists and evaluate the checklists and data.

I. REASONS FOR THE SURVEY

Advances in medicine during the last decades have reduced infant mortality sufficiently, in the countries of the International Regional Organization for Agricultural Sanitation (OIRSA) region,

1/ Entomology Research Division and Crops Research Division, Agricultural Research Service, United States Department of Agriculture.

2/ ROCAP PASA LA(AJ) 17-66; PIO/T 596-001-2-60007 .

that malnutrition is becoming, by far, the greatest cause of infant mortality. We realize that there are many factors involved in infant malnutrition but will deal only with the amount of food available and the impact of insect pests and plant diseases on the amount of food produced. It is obvious, then, that any method which may increase the production of food must be investigated.

The general population in the area of OIRSA still depends, as in the pre-Colombian era, on the corn and beans that they can grow, and the fruits they can collect. In many areas the production of food crops, basically corn, beans, rice and plantains is still quite primitive. The well-to-do farmer in Central America is attracted by the glamour, or dollar producing crops, especially cotton, and has a tendency to disregard food crops altogether. Also, the best lands are used for other than food crop production--the greatest amount of land involved in the production of food are the slopes of the many hills and mountains in these countries. These "vertical" acres are farmed by the poor campesino, who must have the food. There are many farming practices which date from antiquity. These old methods are, no doubt, the most logical for the type of farming which must be practiced but are also the poorest for the efficient application of modern agronomic and entomological schedules. A fairly general practice is to use the same plot of land for two crops, corn and beans, with the dry corn stalk serving as bean poles for the climbing beans. Entomologically this practice is bad from two viewpoints: first, some pests from one crop may damage the other and secondly, the dry bean stalks will harbor stem-borers which will enhance the population buildup of this pest for the subsequent corn crop. Another inefficient practice is growing rice as an upland or "temporal" crop when the spectrum of insect species attacking this rice not under irrigation is much wider. On the other hand, there are more diseases attacking rice under irrigation than as an upland crop. Some sort of balance must be achieved to have the maximum yield.

In the OIRSA countries there are at least three distinct agricultural regions:

1. The wet and hot Gulf of Mexico-Caribbean coast;
2. The dry to semi-dry Pacific Coast; and
3. The mountainous areas which have a considerable vertical distribution of different agricultural climates.

The semi-dry Pacific Coast has a six-month wet season, called "invierno," although it is the true summer and the "verano," or dry season, which is the true winter. Due to our late arrival in Central America, the survey had to be conducted during the dry season, so that few of the main crops could be observed directly. However, many truck crops and some high altitude crops, like the potato, were observed.

The main problem is losses from pests and diseases in the food crops.

This was emphasized by the Ministers of Agriculture at the XI CIRSA (Committee for International Regional Agricultural Sanitation) meeting when they requested OIRSA to conduct a survey to determine what insects and diseases are of the greatest, actual or potential, economic importance to the Central American Region. Their objective as to establish program priorities for OIRSA on a firm basis. Calls have been made to member countries from time to time, for the information to prepare such check lists, but it was never completed. It appears that they were never finished because of the lack of technicians to evaluate what was available and time to assemble them. For our study the information already existing in the countries visited was freely drawn upon and some educated guesses made where there was little data.

II. OBJECTIVES OF THE SURVEY

The objectives of the survey, from the OIRSA viewpoint, were threefold:

1. To consolidate all of the information available in the different countries on insect pests and plant diseases as well as other available information of interest;
2. To make a completely objective estimate, when possible, of the losses caused by the major pests and diseases in the major food crops; and
3. To make an evaluation of the different problems, which, when solved, would improve the caliber of entomological and pathological work in the area.

ROCAP states that the purpose of the (PASA) Participating Agency Service Agreement is provide assistance and support to OIRSA in conducting the survey. Specifically, it is to make possible a report identifying the diseases and pests of major economic importance, particularly in production of food crops, and suggest regional programs that should be carried out (by both OIRSA and ROCAP).

III. THE INSECT LISTS

The insect lists presented are not complete, since all of the crops in the area are not included. Eventually the lists may be expanded to include all crops but for the present they are limited to the major food crops, the majority of the vegetables and many of the fruits, as follows:

<u>English</u>	<u>Spanish</u>	<u>Scientific Name</u>
<u>Main Crops (M)</u>		
Beans, kidney	Frijoles	Phaseolus vulgaris
Beans, lima	Frijoles	Phaseolus limensis
Beans, broad	Haba	Vicia faba
Beans, sieva	Frijol, chilipuca	Phaseolus lunatus
Corn	Maiz	Zea mays
Plantain	Platano	Musa paradisiaca
Potato	Papa, patata	Solanum tuberosum
Rice	Arroz	Oriza sativa
Sorghum	Maicillo, sorgo	Sorghum vulgare
Wheat	Trigo	Triticum aestivum
<u>Vegetables (V)</u>		
Beets	Remolacha	Beta vulgaris
Cabbage	Repollo, col	Brassica oleracea var. capitata
Carrot	Zanahoria	Daucus carota
Cassava	Yuca	Manihot esculenta
Chayote	Chayote, guisayote, huisquil	Sechium edule
Cucumber	Pepino	Cucumis sativus
Eggplant	Berenjena	Solanum melongena var. esculen- tum
Garlic	Ajo	Allium sativum
Lettuce	Lechuga	Lactuca sativa
Onion	Cebolla	Allium cepa
Peas	Guisante, arveja, chicharo	Pisum sativum
Peppers	Chile, aji	Capsicum annuum var. (several)
Squash	Ayote, calabaza	Cucurbita pepo
Sweet potato	Camote, batata	Ipomea batatas
Tomato	Tomate, jitomate	Lycopersicum esculentum
<u>Fruits (F)</u>		
Avocado	Aguacate	Persea americana var.
Banana	Banano, guineo	Musa sapientum
Cantaloupe	Melon	Cucumis melo

English

<u>Fruits (F)</u>	<u>Spanish</u>	<u>Scientific Name</u>
Citrus	Citricos	Citrus sp.
Mango	Mango	Mangifera indica
Watermelon	Sandia	Citrullus vulgaris
Papaya	Papaya	Carica papaya
Pineapple	Pina	Ananas comosus

The lists are:

A general list of insect pests of a selected group of economically important crops of Central America (See Appendix II). This list identifies the insects affecting the major crops of the area, listed alphabetically, with the Spanish name of the crop in parenthesis following the English name. In order to show the relative importance of the insect pest in the OIRSA area, a weight index number has been given on the left side of each insect. The "weight" as given is computed as follows:

- 0 When the insect is not reported;
- 100 If the insect is reported as a minor pest; and
- 200 If the insect is reported as a major pest.

The average of these values over the seven countries is the "weight" given to the pest, and is a relative importance placed on the insect species by the countries involved. The columns to the right indicate the distribution of the pest by countries. If the country designation is underlined, the pest is considered to be of major importance in that country.

The distribution is not complete, in that the insect reported from one country may also be in the others, but has not yet been found. More collections will help complete the accuracy of the list.

An alphabetical list of the scientific names of all insects reported as pests, given a common name when one is available, and some pertinent notations. (See Appendix III). This list includes all known synonyms so that since early 1966 old names still used in the lists of the various countries can be referred to by their new names. The common names of the insects are misleading since too many species are known by the same name. On the alphabetical list, therefore, names of insect pests which also occur in the list of common names of the Entomological Society of America, have been translated into Spanish. This is not necessarily a good practice but has been done in the hope that eventually we will have a list of common names for all agricultural

pests occurring north of Panama. There are still many species without common names and these should be supplied. OIRSA should be responsible for the editing and addition of all new names.

A corresponding list of common names, giving the scientific name of the pest. (See Appendix IV).

Losses due to various insect pests in Central America and Panama

Lack of basic data makes an objective estimate of the losses caused by the different insect pests in the various crops impossible. However, certain approximations of losses may be made in terms of Central American Pesos, which are at par with the U.S. dollar. Following is a short discussion of the insect pests on some of the principal crops.

Avocado. The principal pests of avocados are the seed moth, Stenoma catenifer Wlshm., and the seed weevils of the genera Conotrachelus and Heilipus. Stenoma and Conotrachelus are responsible for the loss of many small fruit which the grower or farmer will accept as normal. Stenoma has also been observed attacking larger fruit in El Salvador. Species of the genus Heilipus, on the other hand, are reported as emerging from mature fruit showing no signs of the infestation. For this reason, where members of this genus predominate, the species mentioned previously may not be noticed or considered of great importance. An estimate of 30% loss due to these pests, not counting the loss in exportability due to the presence of the seed weevils in the area, does not seem unreasonable.

Beans. Bean crop losses due to insects are difficult to assess. The presence of viruses transmitted through the bean seed causes a very high percentage of the plants to be infected at germination. Beside the viruses, there are a number of insects which cause crop damage. A very important group of insects belongs to the genus Apion. These weevils attack the seeds in the pods and may infest as many as 60% of these seeds. The species most generally named in the lists is Apion godmani Wagner. (Recent developments in El Salvador show that there are tremendous losses from what is reported as Apion godmani Wagner.) Another pest which may be of greater importance than previously thought is Bemisia tabaci (Genn.) which is known to transmit at least three different viruses. This species is found in tremendous populations in most of Central America. The ten most important pests of beans, in the estimation of the different countries are:

- 171 Diabrotica balteata LeConte
- 171 Epilachna varivestis Muls.

- 114 Empoasca krameri R&M
- 100 Estigmene acrea (Drury)
- 86 Liriomyza sp.
- 57 Cerotoma atrofasciata
(Jacoby)
- 57 Elasmopalpus lignosellus
(Zell.)
- 57 Empoasca phaseola Oman
- 57 Etiella zinkenella (Treits)
- 57 Prodenia sp.

It must be remembered that the importance of the weights was determined on the basis of the whole area.

Corn. This is the most important crop of the entire area. Here we find the most important pests in the family Noctuidae. Cutworms do a tremendous amount of damage to very young plants as do some of the leaf beetles, especially Diabrotica balteata LeConte. However, the most important insect pests are Spodoptera frugiperda (F. E. Smith) and Heliothis zea (Boddie).

These insects, known as the "cogollero" and "gusano elotero," respectively, are seldom controlled and in my estimation may reduce the crop by as much as twenty percent. In some areas the cornstalk borer, Zeadiatraea lineolata (Walker), may do considerable damage, but this is mostly in those areas where biological balance has been fractured by excessive use of insecticides in the cotton fields. In El Salvador one field had an average of more than nine borers per stalk and in Guatemala some old stalks from the previous harvest were found to have about one larva per stalk during the middle of the dry season. The peculiar use of dry corn stalks as bean poles does not help correct cultural practices which dictate the destruction of all stalks right after the harvest. The ten most important insect pests of corn are:

- 200 Spodoptera frugiperda (Smith)
- 129 Heliothis zea (Boddie)
- 114 Zeadiatraea lineolata (Walker)
- 114 Diabrotica balteata LeConte
- 100 Elasmopalpus lignosellus (Zell.)
- 86 Dalbulus maidis (Del. & Wol.)
- 86 Mocis latipes (Guenee)
- 86 Rhopalosiphum maidis (Fitch)
- 57 Euxesta sororcula Wied.
- 43 Cerotoma ruficornis Oliver

It should be noted here that in Central America the greatest problems with insects on corn are found in the Pacific Coast. Corn examined in the San Pedro Sula area of Honduras was comparatively undamaged although S. frugiperda was present.

Fruits. In general, the most important insects attacking fruits are members of genus Anastrepha. This genus contains about five main species which attack most of the fruits listed. In El Salvador there are two crops of mangoes; three fourths of the fruit from the first crop may be harvested, the second crop is so heavily attacked by fruit flies that it is usually non-marketable. Things are even worse in Nicaragua, Costa Rica and Panama--countries infested with the fruit fly, Ceratitis capitata Wied. Besides the loss in fruit they must reckon with the cost of internal quarantine and loss in export trade. It is estimated that about 40% of the mango crop is lost. Cantaloupe and watermelon crop losses are due mostly to cutworms and other noctuids with Diaphania nitidalis (Stoll) doing the damage in most countries.

Pastures. Pastures have insect pests but the cattleman in Central America does not use pasture rotation or believe in improved pastures. In spite of this, some work has been done with pests of some grasses, particularly in Guatemala and El Salvador. The most important insect pest being Aenolamia postica (Walker), a spittle bug, commonly known as "la mosca pinta."

Plantains. The plantain is one of the dietary standbys of the common people. The banana root borer, Cosmopolites sordidus Germar, is an ubiquitous pest throughout the area but at the moment has been eclipsed by the Moko disease (bacterial wilt), which has reduced the plantain crop to a minimum.

Potato. This is a crop of the high altitude areas of Central America and as far as is known, only one country, El Salvador, does not have extensive plantings. The whole gamut of soil insects, wireworms, cutworms, and white grubs needs to be considered here. In addition, the potato tuberworm Pthorimaea operculella (Zeller) is an important pest present in all countries. Although losses in potatoes are difficult to assess, there is no doubt that the quality of the crop is reduced by more than 50%. I saw one planting in Santa Rosa de Lima, Guatemala, where the number of cutworms was almost equal to the number of potatoes harvested and there was no potato undamaged. In my estimation, the potato crop may be increased at least 30% with some investigations in the area of soil insects.

Rice. As I have mentioned before, the major trouble with insect pests in this crop is the Central American preference for planting upland rice. The result is that many soil insects, which would not normally be pests on the crop, do cause considerable damage (estimate: 20%). Irrigated rice would increase yields by at least 50%.

Sorghum. This crop is becoming more important in some countries of the OIRSA region, not only as a source of animal feeds, but also in hard times as a substitute for corn in the human diet. Losses are less than for corn, but since this may be due to lack of experience, I am going to suggest the same amount of loss for this crop as for corn, that is, 20%.

Stored Grains. The insect pests of stored grains are the most destructive of all the pests of agricultural products. It has been estimated, that these insects could very easily destroy 40% of those grains stored for any length of time and 15% of the new crop. One solution has been the construction of national elevators which buy and store from 30 to 60% of the grains produced. However, the main purpose of these purchases and storage is for the stabilization of prices and leaves still a good portion of the grains and seeds in the hands of the growers and small storekeepers where the insects can readily destroy them.

Truck Crops. All of the crops I have listed under vegetables are included under this heading. An important group of truck crop damagers are the cutworms which belong to the order Lepidoptera, family Noctuidae. In some of the vegetables the soil insects are important and of the Cruciferae family, the pierids and other caterpillars need most to be controlled. In both Mexico and Panama, tomatoes are important. As a result, there is a fairly extensive list of insects which will attack the plant and the fruit. Because of the time of year, large plantings of this crop were not seen, but I would say that cutworms and flea-beetles are of great importance. In many areas

Phyrdenus muriceus Germar, a stem-boring weevil is of considerable importance. The presence of several viruses and many nematodes makes the estimation of the loss due to insects quite difficult. After a certain age the viruses take over and that is the end of the harvest. If we say that the viruses are transmitted by insects, a reduction in yield of about 40% may be claimed. However, more work will have to be done on the vectors of the viruses before the entomologist will be able to claim all such losses.

My projections of the losses in those crops with data available, in terms of Central American pesos, are given in Appendix No. 1.

IV. DISEASES OF A SELECTED GROUP OF THE ECONOMICALLY IMPORTANT CROPS OF CENTRAL AMERICA

The immediate and primary objective is to supply the best possible list of the plant diseases of the important crops of the region. (This objective is met by the attachment under the title given above.) (See Appendix V) Except for some portions, it is not original with the author. It was composed from sources available in the Central American area--in the Ministries, old Servicio records--as well as current information from the technicians working in the various crops.

The list should be made available to Central American pathologists as soon as possible. The list is annotated to some extent. Mention is made of diseases reported in the West Indies or South America which might be expected to appear or to have appeared in Central America. An attempt is made to indicate priorities among the diseases. No attempt is made to establish priorities in the crop groups. Wherever possible, within the writer's own knowledge; whenever synonymy existed, the generally accepted scientific name is used. When unknown, the original name used is retained.

Crops covered in the "survey" were selected, after conference with local technicians, as follows:

Part A - Food Crops. Corn, beans, sorghum, rice, potatoes, wheat and cane.

Part B - Horticultural Crops. Papaya, banana, mango, avocado, coconut, anona, pineapple, and citrus.

Part C - Vegetable Crops. Tomato, carrot, cabbage, pepper, onion, peas, cucurbits, beets, yuca, malanga, lettuce, and sweet-potato.

Part D - Cash Crops. Coffee, cotton, cacao, yams, lemon-grass, and rubber.

Part E - Forage and Pasture Crops. Alfalfa, bermuda, pangola, Guatemala, guinea, para, and imperial grasses.

In the preparation of the checklist, problems of a general nature as well as specific disease problems were uncovered. These discoveries affected the original objectives. They will be mentioned with some suggested solutions. An evaluation of the checklist itself will be found as part of the discussion of Plant Disease Surveys. These Surveys are one of the suggested regional programs.

There should certainly be a followup to this preliminary work. The checklist should be completed for all crops in Central America. Many

potential or unpublished checklists exist in the area. The Ministers should assist and encourage their publication. Perhaps, until OIRSA is ready with a local vehicle for this publication, the USDA Plant Disease Reporter or the FAO Plant Protection Bulletin could publish this store of material.

The recommendations which are made are not pointed specifically at OIRSA; many apply more nearly to ROCAP or AID. The United States has a considerable stake in keeping informed about Central America.

V. FACTORS TO BE MODIFIED IN ORDER TO IMPROVE ENTOMOLOGICAL AND PATHOLOGICAL KNOW-HOW IN CENTRAL AMERICA AND PANAMA

These factors may be divided into two groups: (A) Those which may be solved immediately or by the concerted action of ROCAP and OIRSA; and (B) factors whose solution may be influenced by ROCAP, on the long run, but where OIRSA will have little, if no immediate influence.

Taking group (B) first, we will present those factors ROCAP could influence over a longer term.

1. Lack of trained personnel. The problem here is basic. The educational system is not designed for the mass production of the necessary manpower to be selected for higher education. A strong superstructure cannot be built without a stronger foundation and the foundation here is lacking. Maybe what is needed is a program for sending large numbers of worthy sixth graders to study at junior and senior high level in another country. (The AID program brings students to U.S. colleges for graduate work). Central America has a total population of about 14 million people, graduating only about seven to fourteen Ingeniero Agronomos a year. Very few end up in the two fields of Plant Pathology and Entomology. Surprisingly, many entomologists and pathologists were trained in the U.S. These are still too few, however, to handle the current problems. One graduate technician would be able to take care of a great amount of research in various fields if enough trained research assistants were available.

2. Lack of entomological and pathological research in key areas. The problem can be stated simply. The trained pathologists and entomologists in these countries are few, have high administrative posts (so that they personally cannot go out in the field), or are in industry where the main job is selling with no time for investigating. Consequently, there is not enough personnel to handle the innumerable research problems. Political pressures direct available research power into the money crops.

The men available are to a large extent engaged in work backstopping the excellent though operational extension services and other programs reaching the small farmer. This is a commendable activity but it cuts into the time necessary for research.

The training provided to meet the steady attrition in manpower is perhaps at a level higher than is generally required for the job at hand, especially for those who might return as extension specialists. This makes it difficult to recruit participants for training, since they find it difficult to acquire the prerequisite.

PASA teams brought in to assist research on specific problems are hindered by a bottleneck of too few available counterpart technicians. Local men are shuffled from one project to another--a classic example of the "Peter-Paul" system.

The lusty growth of extension services means an increasing need for both pathological and entomological "backstopping."

One solution is to set up a cooperative agreement between the various countries, AID and American universities for sending graduate students at the Masters level to do their field work in Central America. Mission agriculturists could select the problems in consultation with the student's graduate committee; AID could supply basic living expenses, and the Ministry of the country could supply transportation and materials at the experiment station. The finished thesis could be published in a Central American journal.

At the FAO World Food Congress, opened by President John F. Kennedy on June 4, 1963, one of the key speeches, which itself quoted from an earlier UNCSAT conference, probably summarized the thinking that today influences people working in agriculture in the developing nations: "There is no doubt that man now has the power to increase agricultural production immensely without having to wait for new discoveries simply by applying known methods, which can easily be adapted to climatic and soil conditions." Kennedy modified this with a further quotation: "It is not shortage of basic scientific knowledge nor of the practical methods necessary for applying it, that is the major obstacle at present to improvement in nutrition in most of the hungry countries. It is rather, the extreme slowness of implantation of the knowledge acquired,' a slowness caused by political, sociological, and physiological obstacles for which effective techniques still must be found."

We are trying to find some of these techniques in the specialized fields of plant disease and insect pest control.

The current issue of Science (Vol. 152:1027-1032, May 20, 1966) carries an article by Dr. Riker, one of the leading authorities in the U.S. on foreign plant diseases: "It has often been erroneously thought that if some of the South American, African and Asian countries would use our seed and methods, there would be plenty of food to go around. Unfortunately, the procedures that work in Europe and North America are quite apt to fail in other places. For that matter procedures that are suitable for southern Wisconsin may not be suitable for northern Wisconsin. Research has been necessary in order to learn the application of basic knowledge to particular localities. Consequently, these questions are raised: Without research by plant scientists, including pathologists and their colleagues, can the developing countries be wholly or partially self-sustaining? Likewise, can they be encouraged to produce much of their own food rather than depend on purchases or gifts? Do they need a philosophy of responsibility and activity along lines that would make them largely or entirely self-sustaining? The 2-year assignments of experts to developing countries too often have proved inadequate. What is needed mostly is long-term research, comparable to that sustaining North America and western Europe. This cannot be emphasized too strongly."

At the Pan American Soil Conservation Congress in Sao Paulo, Brazil, Secretary Freeman, referring to Ministries of Agriculture and the agencies dealing with extension, agricultural schools, supervised credit, experiment and research stations, and cooperatives, summing up said: "More resources must be budgeted for the operation of these institutions. Personnel who have the necessary technical and administrative skills to operate them effectively must be selected, trained and retrained."

Now, reconsidering group (A), (those factors which OIRSA would have direct control over but which must be backed by ROCAP) - a solution to these factors is already under negotiation; mentioning them may be redundant.

Most of the agricultural community is still not sold on the use of insecticides or fungicides or cannot use them due to various factors not only the economic. The small but powerful group of cotton growers, however, are misusing these materials. In this environment, there has been a tremendous proliferation of small formulating companies which must be controlled if there is to be any uniformity in the materials sold. Most of the countries already have laws which will allow the periodic checking of the materials produced by these companies. However, the samples have to be sent to reputable firms in the U.S. This is so time-consuming and costly, that it is almost useless, and therefore, done only in very extreme cases.

A logical solution, of course, is for OIRSA to have a regional laboratory equipped with one of the new column chromatograph chemical analysis machines able to give an analysis in 15 minutes and, thus, keep up with the demand.

1) Entomological Factors

(a) A permanent Central American Insect Collection. A problem of great importance to the area is the knowledge of the local insect fauna. Proper control measures depend on the entomologist knowing which insect he is dealing with. For many years, the U.S. Department of Agriculture has been identifying the insect pests sent in by the various Central American Governments. The result has been a series of small insect collections spread over the various countries with no coordination and less cooperation. In many instances the insect collection is built up and after a change in government allowed to mold or be lost otherwise. In some countries the insect pests are only known from a list of names. Another unhappy circumstance is the fact that many genera, and even families, are in such a bad taxonomic state that, without a revision, no clearcut names can be given to the insects. The necessary revisions cannot be made without extensive material and for that we need a collection of insects from the area.

This insect collection, however, has to meet certain standards, if it is to be effective. (i) Provisions must be made to store the collection permanently. The ideal situation would be a building built especially for the collection with work rooms and office space for the staff and visiting entomologists. This building should be humidity controlled to give maximum protection to the collection. (ii) An adequate salary and secure position should be offered the curator to make the position interesting to well-prepared entomologists. (iii) The collection should be located where it will have the maximum effect on the agronomy students, since they will eventually be the mainstay of the various Ministries of Agriculture. The existence of a collection of this type means that taxonomists will be using the material in possible revisions. This, in turn, implies that there will be new species described. Therefore, (iv) it is imperative that the type specimens be well protected and I would suggest that, wherever possible, paratypes be sent to the leading museums or at least to one leading museum chosen with care.

I would, therefore, suggest that a special building be built at the "Escuela Agricola Panamericana" in the valley of El Zamorano, Honduras. A building the size of their herbarium (10,000 square feet) can be constructed for \$30,000. If a certain portion of the facilities were used for the teaching of systematic entomology, it would have the greatest possible impact on the entomology of the area. The necessary personnel for training purposes could be supplied under PASA agreements.

(b) I found a tremendous lack of cooperation in entomological problems between countries. In such small countries, where the ecological conditions have such broadly defined limits, it is logical to assume that entomological problems will be common to more than one country. The tendency, however, is for each country to ignore the problems in the neighboring countries. There is some exchange of

investigative reports from one Ministry of Agriculture to another but these are promptly misplaced, so that each Ministry works substantially alone. Neither is there any entomological Society which could eliminate government middleman and inform the entomologist on an individual basis. OIRSA already has one program in which potential areas for the development of migratory grasshoppers are inspected at certain intervals by very competent personnel and another for the Mediterranean Fruit Fly. However, there is no program for the surveying of other entomological pests which may be as bad or worse than the migratory grasshoppers or the Medfly.

My suggestion is, that under PASA agreement with the Plant Pest Control Division, ARS and USDA, one person in each country be trained in the correct sampling procedures and pest reporting techniques used by that Division, so that the same type of service may be furnished by OIRSA to its member countries. These plant pest experts would also be trained in the collection and preservation of specimens for the Central American insect collection and would be required to send them to the museum every month. To encourage better distribution of entomological information, I strongly urge that OIRSA, with strong backing from ROCAP, be instrumental in establishing an Entomological Society with its own Journal. After the first inertia is overcome, perhaps the entomological community will be provoked to improve the quality of the research and to publish.

(c) Finally, I think that compiling a list of common names for the region of ORISA is important enough to convene a congress of entomologists from the seven countries to assign common names to those insects which do not have them, a name which is unique and still useful in talking to the "campesino".

2. A Plant Disease Survey

This may look like taking inventory while the barn is burning and it would be better to fight the fire. This might be correct if you did not intend doing something about it to keep it from happening again. A campaign can't be planned if you don't know what you are fighting or how to deploy your available forces.

Plant diseases, even in this day and age, are still prevented and not cured. We are approaching the era of systemic "cure-all" chemicals, but for now it is still preventive control.

I would like to quote from a recent article by Dr. Albert S. Muller, Director of "The Escuela Agricola Panamericana" at El Zamorano, Honduras and one of Latin America's leading Plant Pathologists. (CEIBA 10 (2): 68-75) "On the rare occasions that control measures are requested of plant pathologists, it is more than likely that the proper time for their application has already passed. Seldom are steps taken for carrying out disease control programs for the years following. Control recommendations given managers and foremen on the scene may

not receive acceptance by the owners. Where there is any doubt as to the correctness of a measure which would increase operating costs, the measure is likely to be refused trial. Any one looking for research data to support control recommendations would have a hard time finding any resulting from work done in Central America itself. Profitable control measures in one region may not be so in another. A number of fruit diseases have been reported in lists of diseases affecting crops in several countries in Central America. The Regional Organization (OIRSA), which is responsible for crop sanitation problems in Central America has published lists which indicate the geographic distribution by countries of fruit crops and many other crops. What is lacking are surveys of disease prevalence and estimates of annual losses, both in the fields and in the markets and means of informing growers that they need to control infectious diseases. Even on corn, only an occasional survey has covered all the growing regions; even then data is limited to one year only and is not repeated."

(a) A permanent Plant Disease Survey would need all the financial and moral support it could get. This support would have to come from everyone working in agriculture in Central America--from the Ministries, Conservation Groups, AID, FAO, Universities, Development Banks, and USDA.

(b) It would provide an up-to-date checklist.

(c) It would need collaborators to make annual surveys of old disease problems and watch for new ones. It would be expected to discover diseases at stages when they were still controllable. The system might even be in effect the day coffee rust, Hemelia vastatrix, again reaches this hemisphere. Coffee rust ended the thriving coffee industry in Ceylon. In 1879, just 10 years too late, the government of Ceylon appealed to Kew in England for help. After considerable economic hardships, Englishmen planted tea to replace the defoliated and dead coffee trees. England became a nation of confirmed tea drinkers. Coffee rust has spread widely, and today is found in Malaya, India, Java, Sumatra, the Philippines, and Africa. Ninety-nine percent of the coffee trees in Central and South America are in continual danger.

(d) Crop surveys could be made during school vacations or even made a part of school curriculums. Students at local agricultural schools could make these annual crop surveys under trained leaders. They could cover all Central American regions and repeat this year after year.

A plant disease survey is only a specialized form of agricultural census. Data from a one-time only survey are useful, even valuable, but real value comes from resurveying, year after year, dry season versus wet season, low altitude and high altitude, so that trends in the data can be estimated.

(e) A permanent plant disease survey would need a home. This would be a well equipped, diagnostic laboratory. It would not be a research center, although it would certainly assist in the coordination of research programs. It would work closely with similar agencies in the United States, Mexico, and South America located with the Entomological Service.

This laboratory would handle the records required to keep the checklist up to date. In so doing it would issue a publication for Central America similar to the USDA Plant Disease Reporter or FAO Plant Protection Bulletin. At the start it might consider a Central America section in one of the two publications mentioned above. The important thing is that local men have a place to publish observations with reasonable promptness and that this publication be available to all of them.

The laboratory would be under the direct control of the Chief of the Plant Disease Survey.

As a minimum staff the Plant Disease Survey Laboratory would require a mycologist, a plant pathologist, and a good laboratory technician well-versed in pure culture techniques. Beyond the chief of the survey (and an adequate office staff) the strength would have to come from the collaborators in the various republics. These are the working plant pathologists. They would not receive direct pay but would have, probably, vehicles available from the survey office and funds for "viaticos." They in turn would administer their portions of the surveys and temporary student help.

The Central laboratory would build up a herbarium of identified plant disease specimens and maintain a pure culture collection where this was required. A sizable initial outlay for reference books would be required but the laboratory would be equipped at nominal cost. A suggested list of requirements has been prepared.

(f) Right now, with the assistance of AID through a PASA, the problem of library facilities that is troubling most Central American workers could be partially solved. A working plant pathologist needs to look up the material cited in the checklist. A small volume illustrated with photos and drawings - "The Pathogenic Fungi of Central America" - could be put together in under a year. It would contain the descriptions of all the major disease causing fungi. It would serve to identify the known and pinpoint the new, and potentially dangerous, diseases for immediate attention. It would have a secondary value as a teaching tool.

(g) The present checklist, as far as it goes has unusual strength in the quality of its reports, to a considerable extent put together on the basis of the reports of specialists, a large part of them checked by the USDA Division of Mycology.

On the other hand, the definition of "specialist" precludes a weakness since specialists care for specific areas of interest and neglect others. A trained technician will note examples of this--certain groups of organisms well covered, certain crops well covered--but others not quite so well represented. It is apparent that pure culture facilities have been poor or lacking in many areas. The phycomycetes, an important group containing many root disease pathogens, are not well represented. Far too many reports are to genera only.

The survey's greatest weakness is probably its base--it is built almost entirely on material brought in for diagnosis and hardly at all on systematic survey.

I have deliberately omitted nematodes--mainly because country to country reports are not consistent or complete. This is discussed in greater detail in (3) Regional Disease Problems.

(h) New techniques can be introduced through a central laboratory.

1) Most obvious, of course, will be standard disease control practices. These are being improved and modified constantly by various research agencies and by their makers. A central clearing house for the exchange of information and the eventual effecting of changes will be invaluable.

2) The whole field of chemical growth regulators in relation to plant disease control is receiving increasing attention in the United States and abroad (and conversely is hardly known in Central America). Participants can be sent through AID for training. Probably a short course can be arranged at some university where this field is active.

3) While well known, in theory, the use of hybrid material for disease resistance, increased production, and better quality is not now being exploited. Several Central American areas would be ideal for the production of hybrid seed.

3. Regional Disease Problems

Apart from the diseases reported under the individual crops and as discussed, there are certain groups of problems needing special treatment.

(a) Nematodes: In the writers opinion, (many workers consulted agree) nematodes are increasing in importance as limiting factors in food production.

The why of this is not well understood. Perhaps the increasing use of the same lands with little or no fallow rotations is a factor. Or perhaps the increasing concentration of cropping with its resulting decrease in isolation is a contributing factor. Or perhaps we are just recognizing something that has always existed as many tomato farmers believe.

At any rate, I believe a good use of an agreement of mutual benefit to the United States and Central America, would be to make a careful appraisal of the nematode situation, crop by crop and region by region. It is well established that nematodes are present in tropical soils regardless of whether they contain cultivated crops or not. They certainly enter into complexes with root diseases and vascular parasites. The Americas are home for many closely related wild, weed relatives of introduced plants and many of these weeds harbour nematodes.

Nematodes, presumably both parasites and non-parasites, are commonly found reported on onions, melons, tomatoes, peppers, beets, carrots, potatoes. They are reported on citrus, coffee, rice, and corn.

The writer, unfortunately, is not well versed in the synonymy or parasitic abilities of the nematodes and within the crops reported many reports did not specify species. Among others, Aphelenchus, Aphelenchoides, Ditylenchus, Gracilscus, Helicotylenchus, Meloidogyne, Pratylenchus, Rotylenchulus, Metaphenlenchus, and Tylenchus are mentioned.

(b) Virus diseases: Again, as with the nematodes, terminology is not fixed. There is a pressing need to explore and better define the virus complexes existing on (among others) the potatoes, tomatoes, peppers, beans, corn, sorghum and related grasses, rice, coconut palms, papayas, cucumbers and gourds, and in numerous wild malvaceous and leguminous hosts.

The nematodes and viruses are, without doubt, cutting heavily into potential food production. Collaboration with agencies well along on research on all these problems needs to be encouraged.

(c) Root Diseases: Phytophthora, Pythium and Rhizoctonia spp. are too general and very poorly reported. This is probably due to the need for careful laboratory cultural practices and techniques and associated costs for supplies--both in short supply. These diseases as a group are probably taking a much greater toll than is suspected. Crops such as the beans along the Pacific coastal areas are showing well defined symptoms but the problem is masked by the more serious virus complex.

(d) Coffee: Much is being done but it is still far from enough. Several threatening diseases are known but not being seriously worked on. Certainly coffee should have a permanent diseases survey system. Coffee rust is present in large areas of the coffee producing world.

(e) Biological and Ecological Control: This field is not well covered. Far too much reliance in both pathology and entomology is placed on the use of chemicals. As in human and animal pathology in Central

America, the desire and reliance seems to be on a chemical injected, sprayed, or dusted as a sure cure-all. If a teaspoon-full works well the bottle-full should cure.

(f) Dodder: Cuscuta spp., which among other things, transmits viruses is more or less neglected.

4. Specific Disease Problems

The checklist--the essence of this report, included as an appendix--lists the diseases reported on the important crops of Central America. With a few exceptions, specifically mentioned, these are not the spectacular type. They are not the potato blight, the Panama disease of bananas, the wheat rust, the chestnut root rot or blight, or the Dutch elm disease which decimated or wiped out whole plant populations.

In Central America today, it is the slow, steady wearing-down process of the consistent and accepted loss which is reducing the potential of food production. It is the type of loss where correction requires demonstration and well handled control measures. (See again the quote from Muller on page 15). It is the correction of this loss that over the years makes the really big difference in proper control or none. But it cannot be easily seen, it can be evaluated only by controlled trials, and these must be supplemented by regular surveys. To get effective control we have a really good example of the "good overall appearance being due to an infinite attention to detail." Local "peon" labor is notorious for the reverse.

It is unfortunate that this type of loss is hard to evaluate; granting, of course, that it were remotely possible to do so on a single appraisal. Paul Miller, Chief of the U.S. Plant Disease Survey made an attempt in 1953 to see what such losses really were. (PDS 37(4): 171-174). He discussed the tendency to report disease losses low (as against easily seen insect losses which are usually quite accurate). He found that official figures over the years were for 2-3% disease losses on cotton. When he went back to the records and data it was found that actual losses were 15-25%. More recently (PDR 50: 254-256) Louisiana has reported losses ranging from 5 to 26%. In PDR 50:350, which reviews losses from all causes in the cotton states, a low of 9.2% is reported for Mississippi and a high of 29.6% for Missouri.

The State of California, among others, attempts to arrive at accurate figures by careful statistical reporting; reporting of a type well beyond our means in Central America for a long time to come. Recognizing California as one of our more progressive agricultural states, it is interesting to see their own appraisal of what these disease losses are. These statistics show considerable sums spent for control.

The Plant Pathology Department of the University of California at Davis, released these figures (to cite only a few) for 1963:

Beans 9.5%; blackeyed-peas 10.1%; corn 14.5%; cotton 9.4%; rice 2.0%; sorghum 6.1%; wheat 10%; oranges 12.6%; avocado (root rot only) 1%.

Considering the relatively low level of control being applied in Central America, these cited figures might indicate the present situation. The USDA Agricultural Handbook 291, published in August 1965, gives for these same crops losses as follows: Beans 17%, black-eyed-peas 8%, corn 12%, rice 7%, sorghum 9%, wheat 14%, and oranges 12%.

Much could certainly be done with just the information we have available now. Beans need not be planted with seed already infected with viruses. Hybrid varieties are available or can be developed. Chemical regulators should be tried. Fertilizers can be used in proper amounts.

Many wild hosts, especially of nematodes and viruses, need to be studied. All through Central America wild Mucuna spp. and the malvaceous Sida spp. are seen with viruses similar to and probably the same as those on beans and cotton.

It is suggested that a number of pathologists with material on beans, corn, potatoes, etc. be provided transportation and expenses for a few weeks at Beltsville to finish publishing their material.

APPENDIX I

LOSSES DUE TO INSECTS ON SOME CROPS IN CENTRAL AMERICA AND PANAMA

The Executive Director of OIRSA, in behalf of the Ministers he represents, requested an estimate of the losses due to insects in as many of the major Central American crops as possible, to give an idea of the economic impact of the major insect pests on principal food crops of the OIRSA region. It would also help in deciding where the maximum effort should be directed if the most important problems are to be attacked first.

It was not possible to obtain data on all of the crops selected but some information was obtained on four of the major crops. These four crops are given in Table 1. The average production in hundredweights as reported by the various countries for each crop and the number of hectares planted to that crop are given in Columns 4 and 5. All other figures are derived from these values and the estimates of losses are given in Columns 2 and 3.

Column 8 gives losses in Central American pesos which are at par with the American dollar. The figures in column 2 and 3 are the author's own estimates of losses caused by the various insect pests and it is felt that they are fairly conservative. It is estimated that the losses in beans will be greater than the 25% used, if one takes into account the impact of virus diseases.

The sum of the entries in Columns 6 and 7 will give the number of hundredweights which would have been harvested had there been no insect damage. That is, Central America could have expected 37,203,144 hundredweights instead of the 30,949,688 actually harvested. On the other hand Columns 9 and 10 reflect the losses if the grain indicated in Column 6 were to have been stored for a full year. Obviously the figure in Column 10 is somewhat high since none of the grain will be stored a full year, but even if we only accept half of the losses due to stored grain pests we would have a total loss, field plus storage, of 89,353,913 Central American pesos. If this amount were divided equally among the six countries, it would mean an additional national income of 14.89 million Central American pesos for each.

Table 1. Losses due to all insect pests attacking corn, rice, beans, and sorghum in the field and under storage.
Data for 1963.

Crop	% Field Loss	% Storage Losses	Average Production In Hundred-weights Per Hectare	Number of Hectares Cultivated	Hundred-weights Produced	Field		Storage	
						Loss in Hundred-weights	Field Loss in CA Pesos	Loss in Hundred-weights	Storage Loss in CA Pesos
Corn	20	30	18.6 <u>1</u> /	1,316,000	30,949,688	6,253,456	22,512,442	9,284,906	33,425,662
Rice	20	25	29.5 <u>2</u> /	206,000	6,362,928	1,060,488	12,725,856	1,590,732	19,088,784
Beans	25	35	10.0 <u>2</u> /	266,000	3,335,640	1,667,820	17,345,328	1,167,474	12,141,730
Sorghum	20	30	18.5 <u>3</u> /	207,000	4,740,714	769,626	<u>2,308,878</u>	1,422,214	<u>4,266,642</u>
							54,892,504		68,922,818

1/ Only 5 Countries

2/ 6 Countries

3/ Only 3 Countries

APPENDIX II

A GENERAL LIST OF INSECT PESTS OF A SELECTED GROUP OF ECONOMICALLY IMPORTANT CROPS OF CENTRAL AMERICA

This list identifies the insects affecting the major crops of the area, listed alphabetically, with the Spanish name of the crop in parenthesis following the English name. In order to show the relative importance of the insect pest in the OIRSA area, a weight index number has been given on the left side of each insect. The "weight" as given is computed as follows:

- 0 When the insect is not reported;
- 100 If the insect is reported as a minor pest; and
- 200 If the insect is reported as a major pest.

The average of these values over the seven countries is the "weight" given to the pest, and is a relative importance placed on the insect species by the countries involved. The columns (numbers) to the right indicate the distribution of the pest by countries. If the country designation is underlined, the pest is considered to be of major importance in that country.

The distribution is not complete, in that the insect reported from one country may also be in the others, but has not yet been found. More collections will help complete the accuracy of the list.

CROP

DISTRIBUTION BY COUNTRIES

		AVOCADO (Aguacate)						
Weight Index	Insect Pest	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	Aconophora sp.	x						
14	Acysta persea Heid.	x						
29	Aethalion quadratum Fowler	x					x	
14	Aleurocanthus woglumi Ashby	x						
29	Anastrepha serpentina (Wied.)		x					
29	Anastrepha sp.			x				
14	Anomala sp.	x						
14	Apate monacha Fabr.	x						
14	Aphis spiraeicola Patch					x		
29	Brochymena quadricpustulata (Fabr.)	x	x					
14	Caulophilus latinasus Say	x						
14	Cephisus siccifolius (Wlk.)						x	
14	Conopia sp.			x				
14	Conotrachelus aguacatae Barber					x		
129	Conotrachelus perseae Barber	x	<u>x</u>		<u>x</u>		<u>x</u>	<u>x</u>
14	Coptotermes niger Snyder					x		
43	Copturomimus persea (Gun.)	<u>x</u>					<u>x</u>	
29	Copturus aguacatae Kissinger	<u>x</u>						
29	Copturus neohispanicus Heller	x		x				
14	Corthylus nudus Schedi.	x						
14	Corythuca sp.	x						
14	Cossonus corticalis Fabr.			x				
14	Cossonus sp.	x						
14	Entylia gemmata Germ.	x	x					
14	Euglyphis directa Schauss			x			x	
14	Gracillaria sp.	x						
57	Heilipus lauri Boh.	<u>x</u>	x				<u>x</u>	
14	Heilipus pittieri Barber						x	
29	Heilipus trifasciatus (Fabr.)					<u>x</u>		
14	Heliothrips haemorrhoidalis (Bouche)						x	
29	Hoplophorion monogramma (Germ.)	<u>x</u>	x				x	
43	Liothrips illex (Moult.)	<u>x</u>	x					x
29	Macroductylus spp.	x					x	
14	Melanaspis aliena (Newst.)	x						
14	Mycetaspis personata (Comstock)	x						
14	Olygonychus yothersi (McGr.)	x						
29	Papilio sp.	x						x
14	Pseudacysta persea (Heid.)	x						
14	Pseudischnaspis bowreyi (Ckll.)					x		
14	Pseudischnaspis longissima (Ckll.)					x		
43	Pseudococcus sp.					x	x	x
14	Pyrrhopyge chalybea (Scudder)				x			
29	Saissetia cffeae (Walker)		x				x	x
14	Selenaspidus articulatus (Morg.)					x		

CROP

DISTRIBUTION BY COUNTRIES

AVOCADO (Aguacate)

Weight
Index

Insect Pest

MEXICO

GUATEMALA

EL SALVADOR

HONDURAS

NICARAGUA

COSTA RICA

PANAMA

29	Silba sp.						
157	Stenoma catenifer Wlshm.	x	x	x	x	x	x
14	Tetranychus urticae Kock	x					
57	Trioza anceps Tutl.	x	x	x			
14	Trioza magnoliae (Ashmead)		x				

BANANA, (Guineos
Platanos)

14	Amycles anthracinae (Walker)				x		
14	Aonidiella aurantii (Moskell)	x					
129	Atta sp.	x	x	x	x	x	x
14	Cactophagus validirostris Gyll.	x					
14	Caligo memnon Fldr.				x		
14	Camptodes chiriquensis Sharp				x		
14	Castnia licus (Drury)					x	
29	Castniomera humboldti (Boisduval)					x	
14	Ceramidia virides (Druce)					x	
14	Chrysomphalus aonidum (L.)	x					
14	Corythucha gossypii (F.)				x		
200	Cosmopolites sordidus Germar	x	x	x	x	x	x
14	Diabrotica balteata Le Conte				x		
14	Diabrotica tibialis Jacoby				x		
14	Diabrotica viridula Fabr.				x		
14	Euphoria yucateca Bates			x			
86	Frankliniella sp.		x	x	x	x	x
14	Gongrocnemis sp.			x			
14	Idiarthron subquadratum S. & P.			x			
14	Leptoglossus zonatus (Dallas)					x	
43	Metamasius hemipterus sericeus (Olive.)				x	x	
14	Ochrostomus poeyi Guerin				x		
14	Olygonychus zaea (McGregor)					x	
14	Opsiphanes tamarindi corrosus Stichel						x
14	Opsiphanes tamarindi Sikyon Fruhs					x	
29	Schistocerca sp.	x			x		
14	Synoeca surinama (L.)				x		

BEANS, (Frijol)

14	Acalymma fairmairei (Baly)	x					
14	Acalymma pallipes theimeii (Baly)	x					
14	Achaeta assimilis (Fabr.)	x					x

CROP

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	BEANS, (Frijol)						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	Acrosternum marginatum (Palisot)	x						
14	Acyrtosiphon pisum (Harris)							x
14	Altica (?) amethystina (Olivier)	x			x			
14	Altica patruelis (Harold)	x						
14	Altica sp.				x			
14	Amphorophora sp.	x						
14	Anticarsia gemmatilis (Hubn.)						x	
14	Aphis gossypii Glov.					x		
14	Aphis rumicis L.	x						
29	Aphis spp.	x						
29	Apion germanum Sharp	x						
43	Apion godmani Wagner	x	x	x				
29	Apion perpitosum	x						
14	Apion praeditum Sharp.	x						
29	Atta mexicana (F. Smith)	x						
14	Baris strenua LeC.	x						
14	Brachistola sp.	x						
14	Caliothrips fasciatus (Pergande)	x	x					
29	Caliothrips phaseoli (Hood)	x						
14	Calligrapha labyrinthica Stal	x						
14	Carneocephala flaviceps (Riley)	x						
57	Cerotoma atrofasciata (Jac.)	x			x			
57	Cerotoma ruficornis rogersi (Jac.)			x			x	
29	Cerotoma spp.							x
14	Chaetocnema sp.				x			
14	Circulifer tenellus (Baker)			x				
14	Colaspis hypochlora Lefevre	x						
29	Colaspis prasina Lefevre						x	
14	Corythucha gossypii (F.)					x		
57	Diabrotica adelpha Harold		x				x	
171	Diabrotica balteata LeConte	x	x	x	x	x	x	
29	Diabrotica duodecimpunctata (Fabr.)	x		x		x		
29	Diabrotica (?) litterata (Sahlb.)					x		
29	Diabrotica longicornis (Say	x						
86	Diabrotica nigrofasciata Jacoby	x	x	x				
57	Diabrotica nigrolineata Jacoby	x	x	x				
29	Diabrotica ocellata Chev.				x			
29	Diabrotica porracea Har.						x	
29	Diabrotica undecimpunctata Mannerheim	x						
29	Diabrotica variabilis Jocoby				x			
86	Diabrotica viridula Fabr.	x		x		x	x	
29	Diabrotica spp.	x						x
14	Diacrisia virginica (Fabr.)	x						
14	Dictyla monotropidia (Stal)					x		
14	Dikraneura spp.							x

CROP

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	BEANS, (Frijol)						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	<i>Diphaulaca aulica</i> Olivier	x						
29	<i>Diphaulaca panamae</i> Barber						x	
43	<i>Diphaulaca wagneri</i> Har.					x	x	
14	<i>Disonycha</i> sp.					x		
57	<i>Elasmopalpus lignosellus</i> (Zell.)	x				x		
114	<i>Empoasca krameri</i> R. & M.	x	x	x		x		x
57	<i>Empoasca phaseola</i> Oman.	x						
86	<i>Empoasca</i> spp.				x		x	
14	<i>Epicaerus aurifer</i> Boh.	x						
14	<i>Epicauta bipunctata</i> Werner.	x						
14	<i>Epicauta corvina</i> LeConte	x						
14	<i>Epicauta croceicincta</i> (Dugés)	x						
14	<i>Epicauta lemniscata</i> Fabr.	x						
14	<i>Epicauta maculata</i> (Say)	x						
14	<i>Epicauta melanochoa</i> Wellm.	x						
14	<i>Epicauta</i> sp.			x				
14	<i>Epilachna borealis</i> (Fabr.)					x		
14	<i>Epilachna defecta</i> Muls.				x			
171	<i>Epilachna varivestis</i> Muls.	x	x	x	x	x		
100	<i>Estigmene acrea</i> (Drury)	x			x		x	
57	<i>Etiella zinkenella</i> (Treits.)	x	x	x				
29	<i>Feltia subterranea</i> (Fabr.)						x	
14	<i>Frankliniella</i> (?) <i>cephalica</i> Crawf.					x		
14	<i>Frankliniella cognita</i> Caldwell	x						
14	<i>Frankliniella</i> (?) <i>fortissima</i> Priesner					x		
14	<i>Frankliniella occidentalis</i> (Pergande)	x						
14	<i>Geraeus senilis</i> (Gyll.)	x						
14	<i>Graminella cognita</i> Caldwell	x						x
14	<i>Gynandrobrotica lepida</i> (Say)	x						
14	<i>Halisidota schausi</i> Rothchild							x
43	<i>Halticus bracteatus</i> (Say)					x	x	
14	<i>Heliothis virescens</i> Fabr.	x						
14	<i>Heliothis zea</i> (Boddie)	x						x
14	<i>Homalodisca liturata</i> Ball.	x						
14	<i>Hortensia similis</i> (Wlk.)	x						
14	<i>Japanagromyza inaequalis</i> (Mall.)						x	
14	<i>Laspeyresia fabivora</i> Meyrick							x
29	<i>Laspeyresia</i> sp.						x	
14	<i>Leucothrips</i> sp.					x		
29	<i>Liriomyza</i> (?) <i>commelinae</i> (Frost)						x	
14	<i>Liriomyza langei</i> Frick	x						
29	<i>Liriomyza pictella</i> (Thomson)	x						
86	<i>Liriomyza</i> sp.			x		x		
14	<i>Lytta ebenina</i> (Dugés)	x						
14	<i>Melanagromyza virens</i> (Loew)							x

		CROP		DISTRIBUTION BY COUNTRIES					
		BEANS, (Frijol)							
Weight Index	Insect Pest	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA	
14	Melanoplus spp.	x							
14	Melipotis indomita (Wlk.)	x							
14	Meloe sp.	x							
14	Miselia sp.	x							
57	Monolepta sp.			<u>x</u>	<u>x</u>				
29	Monomacra frontalis (Jac.)			<u>x</u>					
14	Neotetranychus sp.					x			
29	Nezara viridula (L.)	x				x			
14	Ollarianus strictus (Ball)	x							
14	Omophoita aequinoctialis L.						x		
14	Omophoita simulans Jac.				x				
14	Orictmetopia fossulatella Ragonot			x					
43	Oxygona acutangula Chev.			<u>x</u>	x				
14	Parachirida guttata fuliginosa (Oliv.)	x							
14	Phyllophaga sp.	x		x					
14	Phyllotreta (?) fallaciae Csiki				x				
14	Physonota alutacea Boh.	x							
14	Pitedia ligata (Say)	x							
14	Plagiometriona clavata (Fabr.)	x							
14	Prepops latipennis (Stål)						x		
57	Prodenia sp.			<u>x</u>			<u>x</u>		
14	Pyrota nobilis (Haag)	x							
14	Pyrota quadrinervata (Herr. y Mend.)	x							
14	Pyrota rugulipennis Champion	x							
14	Rachiplusia ou (Guénée)	x							
14	Rhynchites mexicana Gyll.	x							
14	Schistocerca paranensis Burmeister	x							
29	Spodoptera exigua (Hübner)	<u>x</u>							
14	Spodoptera frugiperda (Smith)	<u>x</u>				x			
14	Systema (?) s-litera L.				x				
14	Systema sp.	x							
14	Tetraleurodes acaciae (Q.)	x							
29	Tetranychus telarius (Linne)							<u>x</u>	
43	Tetranychus sp.				<u>x</u>	x			
14	Thrips spp.	<u>x</u>							
29	Trialeurodes vaporariorum (Westw.)	x					x		
14	Trialeurodes spp.		x						
14	Trichoplusia oxygramma (Geg)					x			
43	Urbanus proteus (L.)	x				x			
71	Xenochalepus signaticollis (Baly)	x	x		x	x	x		
14	Zygospila signatipennis (Stål)	x							

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	CROP						
		BEETS (Remolacha)						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	<i>Agrotis ipsilon</i> (Hufn.)						X	
86	<i>Agrotis</i> spp.		X		X			X
29	<i>Aphis gossypii</i> Glov.						X	
14	<i>Chlosyne</i> sp.			X				
29	<i>Empoasca</i> spp.						X	
14	<i>Epitrix</i> sp.	X						
86	<i>Feltia subterranea</i> (F.)		X		X		X	
14	<i>Hyalodictyon truncatum</i> (Wlk.)			X				
29	<i>Hymenia recurvalis</i> (F.)					X		
14	<i>Phyllophaga menetriesi</i> Blanch.						X	
14	<i>Phyllophaga sonjosicola</i> Sayl.						X	
14	<i>Phyllophaga vicina</i> Moser						X	
29	<i>Plutella maculipennis</i> (Curtis)			X				
86	<i>Prodenia</i> spp.		X		X		X	
57	<i>Psara bipunctalis</i> (F.)			X		X		
14	<i>Spodoptera frugiperda</i> (Smith)					X		
CABBAGE (Repollo)								
14	<i>Acrosternum</i> sp.	X						
14	<i>Agromyza pusilla</i> Meig.		X					
29	<i>Agrotis ipsilon</i> (Hufn.)						X	
29	<i>Agrotis malefida</i> Guenee						X	
29	<i>Aphis gossypii</i> Glov.	X						
143	<i>Ascia monuste</i> (L.)			X	X	X	X	X
86	<i>Brevicoryne brassicae</i> L.	X		X				X
14	<i>Bulimulus corneus</i> (Sowerby)					X		
14	<i>Copitarsia consueta</i> Wlk.	X						
14	<i>Copitarsia</i> sp.	X						
14	<i>Epitrix</i> spp.	X						
14	<i>Evergestis rimosalis</i> Guenée							X
14	<i>Faustinus</i> sp.					X		
29	<i>Feltia subterranea</i> (F.)						X	
14	<i>Hellula phidilealis</i> (Wlk.)					X		
86	<i>Leptophobia aripa</i> (Boisduval)			X	X		X	X
29	<i>Leptophobia</i> sp.	X						
14	<i>Miselia</i> spp.	X						
43	<i>Murgantia histrionica</i> (Hahn.)	X			X			
14	<i>Myzus persicae</i> (Sulz.)	X						
29	<i>Nezara viridula</i> (L.)	X						X
29	<i>Phyllophaga menetriesi</i> Blanch.						X	
29	<i>Phyllophaga sanjosicola</i> Sayle						X	
29	<i>Phyllophaga vicina</i> Moser						X	
29	<i>Phyllophaga</i> sp.					X		
14	<i>Phyllotreta vittata</i> F.							X

		DISTRIBUTION BY COUNTRIES						
		CROP						
		CABBAGE (Repollo)						
Weight Index	Insect Pest	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
57	<i>Pieris oleracea</i> Harr.		X					
57	<i>Pieris protodice</i> Boisd. & Lec.		X					
86	<i>Pieris rapae</i> (L.)	X	X					X
129	<i>Plutella maculipennis</i> (Curtis)	X	X		X		X	X
57	<i>Prodenia</i> spp.					X	X	
14	<i>Schizaphis graminum</i> (Rand.)	X				X		
14	<i>Spodoptera frugiperda</i> (Smith)					X		
129	<i>Trichoplusia ni</i> (Hubn.)	X			X	X	X	X
14	<i>Xenochalepus signaticollis</i> (Baly)		X					
CANTALOUPE (Melon)								
43	<i>Acalymma pallipes theimei</i> Baly	X				X		
29	<i>Acalymma trivittata</i> (Mann.)					X		
29	<i>Acalymma vittata</i> (Fabr.)	X						X
14	<i>Acalymma</i> sp.				X			
14	<i>Agrosoma pulchella</i> (Guer.)	X						
29	<i>Agrotis</i> spp.						X	
14	<i>Anasa tristis</i> (De Geer)							X
14	<i>Antianthe expansa</i> (Germar)	X						
114	<i>Aphis gossypii</i> Glov.	X				X	X	X
29	<i>Aphis</i> spp.			X	X			
14	<i>Bemisia tabaci</i> (Genn.)					X		
14	<i>Caliothrips fasciatus</i> (Pergande)	X						
14	<i>Conotrachelus seniculus</i> LeConte					X		
14	<i>Corythucha</i> sp.					X		
100	<i>Diabrotica balteata</i> LeConte	X				X	X	X
14	<i>Diabrotica 12-punctata</i> (Fab.)					X		
14	<i>Diabrotica soror</i> LeConte	X						
29	<i>Diabrotica undecimpunctata</i> Man.	X						
29	<i>Diabrotica</i> sp.							X
59	<i>Diaphania hyalinate</i> (Linne)				X			
129	<i>Diaphania nitidalis</i> (Stoll)	X		X		X	X	X
29	<i>Diaphania</i> sp.	X						
100	<i>Epilachna borealis</i> (F.)			X	X	X		X
43	<i>Estigmene acrea</i> (Drury)	X				X		
14	<i>Euphoria basalis</i> Burmeister	X						
14	<i>Euschistus zopilotensis</i> Dist.	X						
14	<i>Eutetranychus banksi</i> (McG.)					X		
29	<i>Halticus bracteatus</i> (Say)					X		
14	<i>Homalodisca liturata</i> Ball	X						
14	<i>Liriomyza pictella</i> (Thomson)	X						
14	<i>Liriomyza</i> sp.	X						

CROP

DISTRIBUTION BY COUNTRIES

CANTALOUPE (Melon)

Weight
Index

Insect Pest

MEXICO

GUATEMALA

EL SALVADOR

HONDURAS

NICARAGUA

COSTA RICA

PANAMA

57 Melittia cucurbitae (Harris)

29 Melittia spp.

14 Membracis mexicana (Guer.)

14 Mormidea cubrosa (Dallas)

29 Myzus persicae (Sulz.)

14 Planococcus citri (Risso)

43 Prodenia spp.

14 Tetranychus desertorum Banks

29 Tetranychus spp.

14 Trialeurodes spp.

43 Trichoplusia ni (Hbn.)

CARROTS (Zanahorias)

29 Agrotis ipsilon (Hufn.)

57 Agrotis spp.

14 Aphis gossypii Glov

14 Aphis spiraecola Patch

29 Empoasca spp.

86 Feltia subterranea (F.)

14 Phyllophaga menetriesi Blanch.

14 Phyllophaga sanjosicola Sayle

14 Phyllophaga vicina Moser.

86 Prodenia spp.

CASAVA, (Yuca)

14 Bemisia tabaci (Genn.)

43 Erinnyis ello (L.)

14 Lonchea chalybea Wiedeman

29 Manduca sexta Johansen

14 Phaonia sp.

29 Silba pendula (Bezzi)

29 Silba sp.

14 Taeniopoda varipennis Rehn

CHAYOTE

29 Acalymma pallipes theimeii (Baly)

29 Acalymma trivittata (Mann.)

29 Acalymma vittata (Fabr.)

14 Anasa tristis (De G)

57 Aphis gossypii Glov

29 Aphis sp.

CROP

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	CHAYOTE						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	<i>Bemisia tabaci</i> (Genn.)					X		
14	<i>Conotrachelus seniculus</i> Le C.					X		
14	<i>Corythucha</i> sp.					X		
57	<i>Diabrotica balteata</i> LeC.					X		X
29	<i>Diabrotica</i> 12-punctata (F.)					X		
57	<i>Diabrotica</i> spp.	X						X
86	<i>Diaphania nitidalis</i> (Stoll.)					X	X	X
57	<i>Epilachna borealis</i> (Fabr.)					X	X	X
29	<i>Estigmene acrea</i> (Drury)					X		
14	<i>Eutetranychus banksi</i> (McG.)					X		
29	<i>Halticus bracteatus</i> (Say.)					X		
29	<i>Liriomyza</i> sp.					X		
29	<i>Melittia cucurbitae</i> (Harris)					X		
29	<i>Prodenia</i> spp.					X		
14	<i>Tetranychus desertorum</i> Banks					X		
14	<i>Trialeurodes</i> sp.	X						
CITRUS (citricos)								
14	<i>Acanthocephala femorata</i> (F.)	X						
14	<i>Achlyodes pallida</i> (Felder)	X						
14	<i>Aconophora</i> sp.	X						
14	<i>Acromyrmex octospinosus</i> (Reich)						X	
114	<i>Aleurocanthus woglumi</i> Ashby	X	X	X	X	X	X	X
29	<i>Aleurothrixus floccosus</i> (Mask)	X					X	
29	<i>Anastrepha antunesi</i> Costa Lima							X
100	<i>Anastrepha fraterculus</i> Wied.	X	X	X	X	X	X	X
100	<i>A. Ludens</i> (Loew.)	X	X	X		X	X	
114	<i>A. mombinpraeoptans</i> Sein		X	X	X	X	X	X
71	<i>A. serpentina</i> (Wied.)		X	X		X	X	X
14	<i>A. striata</i> Schiner			X				
14	<i>Anomala discoidalis</i> Bates	X						
86	<i>Aonidiella aurantii</i> (Maskell)	X	X		X	X	X	X
14	<i>A. citrina</i> (Coq.)					X		
143	<i>Aphis gossypii</i> Glover	X	X	X	X	X	X	X
100	<i>Aphis spiraeicola</i> Patch	X		X	X	X		
14	<i>Aspidiotus perniciosus</i> (Comstock)	X						
43	<i>Atta cephalotes</i> L.					X	X	
14	<i>Atta mexicana</i> (F. Smith)			X				
14	<i>Atta sexdens</i> (L.)						X	
43	<i>Atta</i> sp.	X		X				
14	<i>Brachyacantha bistrispustulata</i> (F.)	X						

CROP

DISTRIBUTION BY COUNTRIES

CITRUS (citricos)

Weight
Index

Insect Pest

MEXICO

GUATEMALA

EL SALVADOR

HONDURAS

NICARAGUA

COSTA RICA

PANAMA

14	Camptoprosopella dolorosa (Will.)	x						
86	Ceratitis capitata (Wied.)					x	x	x
86	Ceroplastes floridensis Comstock	x	x		x	x	x	x
14	Chilocorus cacti (L.)				x			
129	Chrysomphalus aonidum (L.)	x	x	x	x	x	x	x
14	Chrysomphalus bifasciculatus Ferris	x						
114	Chrysomphalus dictyospermi (Morg.)	x	x	x	x	x	x	x
86	Coccus hesperidum L.		x	x	x	x	x	x
100	Coccus mangiferae (Green)	x	x	x	x	x	x	x
86	Coccus viridis (Green)		x	x	x	x	x	x
29	Cotinis mutabilis G. y P.		x	x				
14	Dendrobias mandibularis Serville	x						
19	Dialeurodes citri (Ashmead.)		x	x				
14	Epilachna borealis (Fabr.)	x						
14	Euschistus sp.	x						
14	Gonodonta bidens (Hbn.)	x						
57	Gonodonta pyrgo (Cramer)	x				x	x	
14	Halticus bracteatus (Say.)						x	
14	Hemiberlesia rapax (Comst.)	x						
86	Icerya montserratensis R. y H.	x	x		x	x	x	x
100	Icerya purchasi Maskell	x	x	x	x	x	x	
71	Icerya similis Morrison			x	x	x	x	x
129	Lepidosaphes beckii (Newman)	x	x	x	x	x	x	x
29	Lepidosaphes gloverii (Packard)	x				x		
14	Leptoglossum zonatus (Dallas)	x						
14	Lopholeucaspis cockerelli (de Charmay)					x		
14	Macroductylus fulvescens Bates	x						
14	Macroductylus suavis Bates						x	
14	Macroductylus subspinosus (Fab.)					x		
14	Macroductylus sylphis Bates						x	
14	Murgantia varicolor (Westwood)	x						
14	Oiketicus sp.	x						
14	Papilio alopis Godm. & Salv.	x						
14	Papilio anchisiades capys							x
114	Papilio anchisiades idaeus Fabr.	x	x	x	x	x	x	x
100	Papilio cresphontes Cramer	x	x	x	x	x	x	x
100	Papilio thoas autocles Rothch.	x	x	x	x	x	x	
14	Paramyelois transitella (Wlk.)	x						
29	Parlatoria pergandii Comst.					x		
14	Pentilia spp.				x			
29	Phyllocoptruta oleivora (Ashmead)	x					x	
14	Pitedia ligata (Say)	x						
71	Planococcus citri (Risso)	x		x	x		x	x

		DISTRIBUTION BY COUNTRIES						
		CROP						
		CITRUS (citricos)						
Weight Index	Insect Pest	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	<i>Pseudischnaspis bowereyi</i> (Cockerell)					x		
14	<i>Pseudischnaspis longissima</i> (Cockerell)					x		
14	<i>Pseudococcus longispinus</i> (Targ.)	x						
114	<i>Saissetia coffeae</i> (Walker)	x	x	<u>x</u>	x	x	x	x
29	<i>Saissetia nigra</i> (Nietner)			<u>x</u>				
43	<i>Saissetia oleae</i> (Bernard)		x	x				
29	<i>Selenaspidus articulatus</i> (Morg.)	x				x		
29	<i>Silba</i> sp.				x		x	
14	<i>Solenopsis geminata</i> (Fabr.)						x	
14	<i>Stobaera tricarinata</i> (Say)	x						
14	<i>Tetranychus</i> sp.		x					
14	<i>Toumeyella</i> sp.			x				
114	<i>Toxoptera aurantii</i> (Fonscolombe)	x	x	<u>x</u>		x	<u>x</u>	x
14	<i>Trigona silvestriana</i> Vach.						<u>x</u>	
114	<i>Unaspis citri</i> (Comstock)	x	x	<u>x</u>	x	x	x	x
14	<i>Walkeriana ovilla</i> Green		x					
14	<i>Willistoniella pleuropunctata</i> (Wied.)				x			
CORN (maiz)								
14	<i>Acroplus</i> sp.					x		
29	<i>Agrotis ipsilon</i> (Hufn.)	x	x					
14	<i>Agrotis malefida</i> Guen.	x						
29	<i>Agrotis</i> spp.						<u>x</u>	
14	<i>Alabama argillacea</i> (Hubner)	x						
14	<i>Anomala</i> spp.	x						
14	<i>Atethmia subusta</i> Hubner			x				
14	<i>Atta</i> sp.	x						
29	<i>Blissus leucopterus</i> (Say)	x	x					
14	<i>Caliothrips phaseoli</i> (Hood)	x						
14	<i>Celama sorghiella</i> (Riley)	x						
14	<i>Celerio lineata</i> (Fabr.)	x						
43	<i>Cerotoma ruficornis</i> Olivier			x				<u>x</u>
29	<i>Cerotoma</i> sp.				<u>x</u>			
14	<i>Chaetocnema</i> sp.	x						
14	<i>Chilo loftini</i> Dyar	x						
14	<i>Chilocorus</i> sp.	x						
14	<i>Chorizagrotis inconcinna</i> (Harv.)	x						
14	<i>Cleistolophus</i> sp.				x			
14	<i>Colaspis</i> sp.	x						
14	<i>Contarinia sorghicola</i> (Cog.)	x						
14	<i>Cotinis mutabilis</i> G. & P.	x						
86	<i>Dalbulus maidis</i> (Del. y Wol.)				<u>x</u>	<u>x</u>		<u>x</u>
14	<i>Dalbulus</i> sp.	x						

CROP

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	CORN (maiz)						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	<i>Diabrotica adelpha</i> Harold						x	
114	<i>Diabrotica balteata</i> LeC.	x	x	x	<u>x</u>		<u>x</u>	x
14	<i>Diabrotica biannularis</i> Harold	x						
14	<i>Diabrotica duodecimpunctata</i> (Fabr.)	x						
14	<i>Diabrotica longicornis</i> (Say)		x					
14	<i>Diabrotica ocellata</i> Chev.				<u>x</u>			
29	<i>Diabrotica porracea</i> Harold						<u>x</u>	
14	<i>Diabrotica undecimpunctata</i> <i>tenella</i> LeC.					x		
43	<i>Diabrotica viridula</i> Fab.						x	<u>x</u>
29	<i>Diabrotica</i> spp.							<u>x</u>
29	<i>Diatraea saccharalis</i> (Fabr.)	x			x			
14	<i>Diatrea</i> sp.		x					
100	<i>Elasmopalpus lignosellus</i> - (Zell.)	x			<u>x</u>	<u>x</u>	<u>x</u>	
14	<i>Epicauta cinerea</i> (Forst.)	x						
14	<i>Epicauta melanochoa</i> Wellm.	x						
14	<i>Epicauta vittata</i> Fabr.	x						
14	<i>Epicauta</i> sp.					x		
14	<i>Epitrix</i> sp.	x						
14	<i>Erythrogonia areolata</i> (Sign.)				x			
14	<i>Erythrogonia jocunda</i> (Wlk.)				x			
43	<i>Estigmene acrea</i> (Drury)	x		x		x		
14	<i>Eumecosomyia nubila</i> Wied.			x				
14	<i>Euphoria limatula</i> (Jans.)					x		
29	<i>Eutheola bidentata</i> Burm.			x	x			
43	<i>Euxesta major</i> (V. der W.)		x	x		x		
57	<i>Euxesta sororcula</i> Wied.			x		x	x	x
14	<i>Euxesta stigmatias</i> Loew			x				
57	<i>Feltia subterranea</i> (Fabr.)			x		x	x	
43	<i>Frankliniella williamsi</i> Hood				x	x		x
14	<i>Frankliniella</i> spp.	x						
43	<i>Geraeus senilis</i> (Gyll.)	x				x	x	
129	<i>Heliothis zea</i> (Boddie)	x	x	x	x	<u>x</u>	x	<u>x</u>
14	<i>Heterotermes convexinotatus</i> (Snyder)					<u>x</u>		
14	<i>Hortensia similis</i> (Walker)				x			
29	<i>Hylemya platura</i> (Meigen)	x						x
14	<i>Iridomyrmex humilis</i> (Mayr.)	x						
14	<i>Macroductylus subspinosus</i> (Fabr.)	x						
14	<i>Macroductylus virens</i> Bates	x						
14	<i>Melanoplus</i> spp.	x						
14	<i>Melanotus</i> sp.		x					
14	<i>Metascarta coeruleovittata</i> (Sign.)				x			
100	<i>Mocis latipes</i> (Guenee)	x	x	x	x	x		<u>x</u>
14	<i>Monomacra frontalis</i> (Jac.)			x				
14	<i>Myochrous coenus</i> Blake.						x	

		DISTRIBUTION BY COUNTRIES						
		CROP						
		CORN (maiz)						
Weight Index	Insect Pest	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
29	Myochrous sp.	x						x
14	Neobrotica hondurensis Jac.			x				
14	Nicentrites testaceipes (Champ.)	x						
14	Nysius ericae (Schilling)	x						
29	Olygonychus mexicanus (McG. & Ortega)	x						x
14	Olygonychus stickneyi (McGregor)	x						
14	Pantomorus femoratus Sharp			x				
14	Peridroma saucia (Hübner)	x						
14	Pelidnota virescens Burm.			x				
29	Phyllophaga spp.	x	x					
14	Pitedia ligata (Say)	x						
14	Podischnus agenor Ol.			x				
43	Prodenia eridania (Cramer)			x			x	
14	Prodenis latifascia Wlk.			x				
14	Prodenia ornithogalli Guénée		x					
29	Prodenia spp.					x		
29	Prorachia daria (Druce)	x		x				
29	Prosapia simulans (Wlk.)						x	x
29	Pseudaletia unipuncta (Haw.)	x	x					
14	Pseudopiazurus centrali-americanus Heller			x				
14	Pseudoplusia includens (Wlk.)					x		
14	Pryophorus pellucens Esch.	x						
86	Rhopalosiphum maidis (Fitch)	x	x	x	x	x		x
14	Rhopalosiphus sp.			x				
14	Schistocerca cancellata (Serv.)			x				
14	Schistocerca spp.	x						
14	Sipha sp.	x						
29	Solenopsis spp.	x						x
14	Sphenarium spp.	x						
14	Sphenophorus callosa (Oliver)	x						
14	Sphenophorus maidis Chett.		x					
200	Spodoptera frugiperda (Smith)	x	x	x	x	x	x	x
14	Spodoptera spp.	x						
14	Strategus barbigerous Chapin							x
14	Strategus julianus Burmeister	x						
29	Talurus rugosus (Jac.)					x		
14	Tetranychus spp.	x						
14	Tettigella miniaticeps (Fowler)				x			
114	Zeadiatraea lineolata (Wlk.)	x		x	x	x	x	x
14	Zulia vilior costaricensis Fennah						x	

CROP		DISTRIBUTION BY COUNTRIES						
Weight Index	Insect Pest	CUCUMBERS (pepinos)						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
29	<i>Acalymma corrusca</i> Jacoby			<u>x</u>				
29	<i>Acalymma pallipes theime</i> (Baly)					<u>x</u>		
29	<i>Acalymma trivittata</i> (Man.)					<u>x</u>		
43	<i>Acalymma vittata</i> (Fabr.)	x						<u>x</u>
29	<i>Agrotis</i> spp.						<u>x</u>	
71	<i>Aphis gossypii</i> Glov.	<u>x</u>				<u>x</u>	<u>x</u>	
29	<i>Aphis</i> sp.			<u>x</u>				
14	<i>Bemisia tabaci</i> (Genn.)					x		
14	<i>Conotrachelus seniculus</i> LeC.					x		
14	<i>Corythuca</i> sp.					x		
143	<i>Diabrotica balteata</i> LeConte	<u>x</u>		<u>x</u>		<u>x</u>	<u>x</u>	<u>x</u>
29	<i>Diabrotica duodecimpunctata</i> (Fab.)					<u>x</u>		
14	<i>Diabrotica undecimpunctata</i> Mannerheim	<u>x</u>						
43	<i>Diabrotica</i> spp.	<u>x</u>		x				
143	<i>Diaphania nitidalis</i> (Stoll.)	<u>x</u>		<u>x</u>		<u>x</u>	<u>x</u>	<u>x</u>
43	<i>Diaphania</i> spp.	<u>x</u>						<u>x</u>
114	<i>Epilachna borealis</i> (Fab.)		<u>x</u>	<u>x</u>		<u>x</u>		<u>x</u>
43	<i>Estigmene acrea</i> (Drury)	x				<u>x</u>		
14	<i>Eutetranychus banksi</i> (McGregor)					x		
14	<i>Gargaphia iridescens</i> Champ.	x						
29	<i>Halticus bracteatus</i> (Say)					<u>x</u>		
14	<i>Liriomyza pictella</i> (Thomson)	x						
43	<i>Liriomyza</i> spp.	x				<u>x</u>		
57	<i>Melittia cucurbitae</i> (Harris)					<u>x</u>	<u>x</u>	
29	<i>Melittia</i> sp.	<u>x</u>						
29	<i>Myzus persicae</i> (Sulzer)	<u>x</u>						
43	<i>Prodenia</i> spp.					<u>x</u>	x	
14	<i>Tetranychus desertorum</i> Bank.					<u>x</u>		
14	<i>Tetranychus</i> sp.	x						
14	<i>Trichoplusia ni</i> (Hbn.)						x	
14	<i>Trialeurodes</i> sp.	x						
EGG PLANT (Berenjena)								
14	<i>Aphis</i> sp.	x						
14	<i>Bemisia tabaci</i> (Genn.)					x		
29	<i>Colaspis prasina</i> Lefevre			<u>x</u>				
14	<i>Corythuca gossypii</i> (F.)					x		
14	<i>Diabrotica balteata</i> LeC.					x		
14	<i>Diabrotica</i> spp.	x						
29	<i>Diaphania nitidalis</i> (Stoll)			<u>x</u>				
14	<i>Epitrix</i> sp.	x						
14	<i>Euphoria geminata</i> Chevr.	x						

		DISTRIBUTION BY COUNTRIES						
		CROP						
		EGG PLANT (Berenjena)						
Weight Index	Insect Pest	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	Faustinus apicalis (Faust.)					x		
14	Halticus bracteatus (Say)					x		
29	Heliothis zea (Boddie)					x		
14	Hylemya sp.	x						
14	Leptinotarsa sp.	x						
14	Leptoglossus zonatus (Dallas)					x		
14	Lineodes sp.					x		
14	Liriomyza sp.					x		
14	Manduca sexta (Johan.)			x				
14	Myzus spp.	x						
14	Neoleucinodes elegantalis (Guenee)			x				
14	Nezara viridula (L.)			x				
14	Phoebis sennae eubule (L.)	x						
14	Sesia sp.	x						
14	Tetranychus desertorum Banks					x		
14	Tetranychus sp.			x				
GARLIC (Ajo)								
29	Agrotis malefida Gn.						x	
29	Agrotis repleta Wlk.						x	
29	Feltia subterranea (F.)						x	
14	Hylemya platura (Mg.)	x						
14	Liriomyza sp.	x						
29	Micromyzus formosanus (Takah)						x	
14	Spodoptera frugiperda (Smith)						x	
86	Thrips tabaci Lind.	x	x					
LETTUCE (Lechuga)								
57	Agrotis ipsilon (Hufn.)	x					x	
29	Agrotis malefida Gn.						x	
29	Agrotis repleta Wlk.						x	
29	Aphis gossypii Glov.						x	
57	Ascia monuste (L.)				x	x		
14	Bulimulus corneus (Sowerby)					x		
14	Faustinus sp.					x		
14	Feltia subterranea (Fabr.)						x	
14	Hellula phidilealis (Wlk.)					x		
14	Leptophobia aripa (Boisduval)				x			
14	Myzus sp.	x						
14	Phyllophaga menetriesi Blanch.						x	
14	Phyllophaga sanjosicola Sayle						x	
14	Phyllophaga vicina Moser						x	

CROP

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	DISTRIBUTION BY COUNTRIES						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
	LETTUCE (lechuga)							
14	Phyllophaga spp.					x		
14	Plusia sp.	x						
14	Prodenia eridania (Cramer)						x	
14	Prodenia latifascia Wlk.						x	
14	Prodenia spp.					x		
14	Pseudopamera nitidula (Uhl.)	x						
14	Spodoptera frugiperda (Smith)					x		
43	Trichoplusia ni (Hbn.)				x	x		
	MANGO							
14	Acanthoderes circumflexus (J-D)					x		
14	Aconophora pugionata Germ.	x						
14	Aleurocanthus woglumi Ashby	x						
14	Anastrepha antunesi Costa Lima							x
43	Anastrepha distincta Green		x					x
43	Anastrepha fraterculus Wied.	x		x				
86	Anastrepha ludens (Loew)	x		x	x			
14	Anastrepha manihoti Costa Lima							x
100	Anastrepha mombinpraeoptans Sein.			x	x	x	x	x
57	Anastrepha serpentina (Wied.)			x	x		x	x
71	Anastrepha striata Schiner.	x		x	x		x	x
14	Anomala sp.	x						
14	Aspidiotus sp.	x						
29	Aulacaspis tubercularis Newst.		x	x				
14	Bothrophorella nigra (Stål)				x			
71	Ceratitis capitata (Wied)					x	x	x
14	Chrysobothris sp.					x		
29	Coccus mangiferae (Green)	x				x		
14	Flatormenis sp.				x			
29	Gonodonta pyrgo (Cramer)					x	x	
14	Hansenia pulverulenta (Guerin-Meneville)	x						
14	Homalodisca coagulata (Say)	x						
14	Ischnaspis longirostris (Sign)					x		
14	Lepturges sp.	x						
14	Mycetaspis personata (Comstock)					x		
14	Planococcus citri (Risso)	x						
14	Saissetia nigra (Nieth.)					x		
14	Synoeca surinama (L.)					x		
14	Tatua tatua (Cuv.)					x		
14	Trigona silvestriana Vachl.						x	
14	Vinsonia stellifera (Westw.)					x		

CROP

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	ONION (cebolla)						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	<i>Acheta assimilis</i> (Fabr.)						X	
29	<i>Agrotis malefida</i> Gn.						X	X
29	<i>Agrotis repleta</i> Wlk.						X	
14	<i>Atta</i> spp.	X						
29	<i>Copitarsia</i> (?) <i>turbata</i> (H & S)	X						
14	<i>Epitrix cucumeris</i> (Harris)							X
29	<i>Feltia subterranea</i> (Fabr.)						X	
14	<i>Frankliniella occidentalis</i> (Pergande)	X						
14	<i>Frankliniella williamsi</i> Hood.	X						
14	<i>Halticus</i> sp.	X						
29	<i>Hylemya</i> (?) <i>antiqua</i> (Maigen)	X					X	
14	<i>Leptoglossus phyllopus</i> (L.)							X
29	<i>Micromyzus formosanus</i> (Takah.)						X	
29	<i>Myzus persicae</i> (Sulzer)							X
14	<i>Phyllophaga</i> spp.					X		
14	<i>Pilemia periusalis</i> (Wlk.)							X
14	<i>Plesiothrips</i> (?) <i>ayarsi</i> Stannard	X						
14	<i>Prodenia eridania</i> (Cramer)							X
14	<i>Prodenia</i> sp.					X		
29	<i>Spodoptera frugiperda</i> (Smith)					X	X	
200	<i>Thrips tabaci</i> Lindeman	X	X	X	X	X	X	X
PAPAYA								
14	<i>Aconophora femoralis</i> Stal					X		
14	<i>Aconophora projecta</i> Funkh.	X						
29	<i>Aconophora</i> sp.	X			X			
14	<i>Anastrepha fraterculus</i> Wiedeman	X						
14	<i>Anastrepha ludens</i> (Loew)	X						
14	<i>Anastrepha</i> sp.			X				
14	<i>Aphis</i> sp.	X						
14	<i>Atta texana</i> (Buckley)	X						
14	<i>Bemisia tabaci</i> (Genn.)						X	
14	<i>Ceratitis capitata</i> (Wied.)						X	
14	<i>Chionaspis</i> sp.							X
14	<i>Cicadella</i> sp.			X				
14	<i>Conopia</i> sp.			X				
14	<i>Dendrobias mandibularis</i> Serv.	X						
71	<i>Empoasca papayae</i> Oman				X		X	X
14	<i>Eotetranychus lewisi</i> (Mc.Gr.)			X				
14	<i>Eotetranychus</i> sp.			X				
29	<i>Erinnyis ello</i> (L.)					X	X	
14	<i>Eubulus</i> sp.	X						

CROP

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	PAPAYA						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	Leptoglossus sp.	x						
14	Olygonychus sp.			x				
14	Planococcus citri (Risso)	x						
57	Rhynchophorus palmarum (Linne)	x	x	x		x		
14	Tetranychus telarius (Linne)			x				
14	Tetranychus sp.					x		
14	Tomaspis inca (Guer.)	x						
143	Toxotrypana curvicauda Gerstaker	x	x	x	x	x	x	x
14	Trialeurodes vaporariorum (Westwood)	x						
14	Volucella esuriens (Fabr.)	x						
PASTURES (pastos)								
43	Aeneolamia postica (Wlk.)	x				x		
29	Aeneolamia varia (F.)					x		
14	Aeneolamila sp.				x			
14	Agallia modesta Osborne and. Ball.						x	
14	Anomala sp.				x			
43	Antonina graminis (Maskell)	x			x	x		
14	Draeculacephala clypeata Osb.						x	
14	Elasmopalpus lignosellus (Zell.)					x		
14	Eutheola bidentata Burm.				x			
57	Mocis latipes (Guénée)	x				x	x	
29	Prosapia bicincta (Fenn.)	x					x	
29	Prosapia plagiata (Dist.)						x	
29	Prosapia simulans (Wlk.)	x			x			
29	Prosapia sp.						x	
14	Psara phaeopteralis (Guenee)						x	
14	Pseudaletia unipuncta (Haw)						x	
29	Schistocerca paranensis Burm.		x			x		
14	Sipha flava (Forbes.)						x	
29	Spodoptera frugiperda (Smith)				x		x	
14	Systema s-litera (L.)						x	
PEAS (guisante, arveja)								
14	Acyrtosiphon pisum (Harris)	x						
29	Agrotis spp.						x	
14	Aphis spp.	x						
14	Apion godmani Wagner		x					
14	Copitarsia consueta Walker	x						
14	Diacrisia virginica (Fabr.)	x						
14	Etiella zinckenella (Treit.)		x					
29	Feltia subterranea (Fabr.)						x	

CROP

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	PEAS (guisante)						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	<i>Liriomyza langei</i> Frick	x						
29	<i>Prodenia</i> spp.						x	
14	<i>Spodoptera frugiperda</i> (Smith)	x						
	PEPPERS (chile)							
14	<i>Acanthocephala</i> sp.	x						
14	<i>Agrotis</i> sp.	x						
57	<i>Anthonomus eugenii</i> Cano	x	x	x		x		
29	<i>Antianthe expansa</i> (Germ.)	x					x	
14	<i>Antianthe</i> sp.	x						
14	<i>Aphis gossypii</i> Glov.					x		
14	<i>Atta texana</i> (Buckley)	x						
14	<i>Bemisia tabaci</i> (Germ.)					x		
14	<i>Corythucha gossypii</i> (F.)					x		
43	<i>Diabrotica balteata</i> LeC.	x				x	x	
14	<i>Diabrotica porracea</i> (Har.)						x	
14	<i>Epicauta funesta</i> (Chevr.)	x						
14	<i>Epicauta ocellata</i> (Dugés)	x						
14	<i>Epitrix cucumeris</i> (Harris)	x						
29	<i>Epitrix</i> sp.	x					x	
14	<i>Faustinus ovatipennis</i> Champ.				x			
14	<i>Halticus bracteatus</i> (Say)					x		
14	<i>Heliothis zea</i> (Boddie)					x		
14	<i>Heliothis</i> sp.	x						
14	<i>Leptoglossus zonatus</i> Dallas					x		
14	<i>Leptophobia aripa</i> (Boisduval)	x						
29	<i>Liriomyza munda</i> Frick	x						
14	<i>Liriomyza</i> sp.					x		
14	<i>Myzus persicae</i> (Suly.)	x						
14	<i>Neoleucinodes elegantalis</i> Guénée						x	
14	<i>Oecleus infuscatus</i> Cald.	x						
14	<i>Orthezia insignis</i> Browne	x						
14	<i>Peridroma saucia</i> (Hbn.)	x						
29	<i>Phyrdenus muriceus</i> (Germ.)				x			
14	<i>Pieris brassicae</i> (L.)	x						
14	<i>Phyllophaga menetriesi</i> Blanch.						x	
14	<i>P. sanjosicola</i> Sayle						x	
14	<i>P. vicina</i> Moser						x	
14	<i>Phyllophaga</i> spp.	x						
14	<i>Pseudococcus longispinus</i> (Targ.)	x						
14	<i>Pulvinaria urbicola</i> (Ckll.)					x		

CROP

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	PINEAPPLE (pina)						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	Cotinis mutabilis G. & P.			x				
14	Drosophila melanogaster Mg.		x					
71	Dysmicoccus brevipes (Ckll.)	x		x		x	x	
14	Haptoncus sp.						x	
14	Metamasius callizona (Chevr.)	x						
14	Phegonus sp.						x	
14	Rhynchophorus palmarum (L.)			x				
14	Thecla basilides (Geyer)	x						
POTATO (papa)								
14	Acanthocephala femorata (F.)	x						
14	Acyrtosiphon pisum (Harris)	x						
14	Agriotes sp.						x	
14	Agrosoma pulchella (Guer.)						x	
29	Agrotis ipsilon (Hufnagle)						x	
29	Agrotis malefida Guenee						x	
14	Aleyrodes sp.	x						
14	Amathes c-nigrum (Linne)							x
14	Arhyssus lateralis (Say)	x						
14	Atta spp.	x						
14	Canthon viride (Beauv.)						x	
14	Carpocapsa pomonella (Linne)	x						
14	Cerotoma ruficornis rogersi Jacoby						x	
14	Colaspis (?) prasina LeFebre				x			
14	Colaspis prasina LeFebre						x	
14	Copitarsia consueta Walker	x						
14	Copitarsia (?) turbata (H.&S.)	x						
14	Copitarsia spp.	x						
29	Corecoris fuscus (Thumberger)						x	x
14	Creontiades rubrinervis (Stal)						x	
14	Diabrotica adelpha Har.		x					
6k	Diabrotica balteata LeConte	x				x	x	
14	Diabrotica corrusca Har.						x	
14	Diabrotica duodecimpunctata (Fabr.)	x						
14	Diabrotica nummularis Har.						x	
14	Diabrotica porracea Har.						x	
29	Diabrotica tibialis Jacoby					x		
29	Diabrotica sp.	x						
14	Draeculacephala portola Ball	x						
14	Dysdercus mimulus Hussey						x	
57	Empoasca krameri R.&M.	x					x	x
14	Empoasca spp.	x						
14	Epicaerus cognatus Sharp	x						

CROP

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	POTATO (papa)						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	<i>Epicaerus inaequalis</i> (Champ.)						x	
14	<i>Epicauta cinerea</i> (Forst.)	x						
14	<i>Epicauta corvina</i> (LeConte)	x						
14	<i>Epicauta distincta</i>						x	
14	<i>Epicauta diversicornis</i> (Haag.)	x						
14	<i>Epicauta longicollis</i> (LeC.)	x						
14	<i>Epicauta maculata</i> (Say.)	x						
14	<i>Epicauta pardalis</i> LeC.	x						
14	<i>Epicauta</i> (?) <i>pestifera</i> Werner				x			
14	<i>Epicauta pestifera</i> Werner							x
14	<i>Epicauta vittata</i> (Fabr.)	x						
29	<i>Epicauta vitticollis</i> (Haag.)	x			x			
43	<i>Epitrix cucumeris</i> (Harr.)	x				x		x
14	<i>Epitrix fuscata</i> DuVal						x	
14	<i>Epitrix subcrinita</i> (LeC.)	x						
29	<i>Epitrix</i> spp.	<u>x</u>						
14	<i>Erythogonia areollata</i> (Sign.)						x	
14	<i>Euphoris pulchella</i> G. & P.	x						
14	<i>Euschistus biformis</i> Stål	x						
14	<i>Euschistus</i> sp.						x	
57	<i>Feltia subterranea</i> (F.)					<u>x</u>	<u>x</u>	
14	<i>Gargaphia iridescens</i> Champ.	x						
14	<i>Graphocephala coccinea</i> (Forst.)						x	
14	<i>Graphocephala sexlineata</i> (Sign.)						x	
14	<i>Gryllotalpa</i> sp.	x						
14	<i>Halticus bracteatus</i> (Say)						x	
29	<i>Leptinotarsa decemlineata</i> (Say)	x	x					
14	<i>Leptoglossus zonatus</i> (Dall.)						x	
14	<i>Liriomyza munda</i> Frick	x						
14	<i>Lygus</i> sp.	x						
14	<i>Lytta quadrimaculata</i> (Chevr.)	x						
43	<i>Macrosiphum euphoribiae</i> (Thomas)	x					x	x
14	<i>Manduca quinquemaculata</i> (Haw.)	x						
43	<i>Manduca sexta</i> (Johan.)	x		x			x	
29	<i>Manduca</i> sp.	<u>x</u>						
14	<i>Murgantia histrionica</i> (Hahn.)	x						
29	<i>Myzus persicae</i> (Sulzer)	x					x	
14	<i>Neotephritis finalis</i> (Loew)	x						
14	<i>Nezara viridula</i> (Linne)						x	
14	<i>Nodonota irazuensis</i> Jac.						x	
14	<i>Nodonota lateralis</i> Jac.						x	
14	<i>Nysius ericae</i> (Schilling)	x						
14	<i>Oliarus acicus</i> Caldwell	x						
14	<i>Omophoita albofasciata</i> Jac.						x	

CROP

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	POTATO (papa)						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	<i>Pachybrachius bilobatus</i> (Say)						x	
14	<i>Paratrioza cockerelli</i> Sulg.	x						
29	<i>Peridroma saucia</i> (Hubn.)						x	
14	<i>Phenacoccus gossypii</i> Townsend & Cock.	x						
29	<i>Phthia picta</i> (Drury)	x		x				
143	<i>Phthorimaea operculella</i> (Zeller)	x	x		x	x	x	
14	<i>Phyllophaga dentex</i> Bates	x						
14	<i>Phyllophaga menetriesi</i> Bl.						x	
14	<i>Phyllophaga sanjosicola</i> Sayle						x	
14	<i>Phyllophaga vicina</i> Moser						x	
57	<i>Phyllophaga</i> spp.	x						x
14	<i>Phyrdenus muriceus</i> Germ.	x						
14	<i>Plagiometriona clavata</i> (Fabr.)	x						
14	<i>Premnotrypes</i> sp.							x
29	<i>Prodenia dolichos</i> (Fabr.)						x	
29	<i>Prodenia</i> spp.						x	
14	<i>Pseudococcus</i> sp.						x	
14	<i>Pyrota decorata</i> (Haag)			x				
14	<i>Spartocera fusca</i> (Thunb.)				x			
14	<i>Spissistilus festinus</i> (Say)	x						
14	<i>Spodoptera frugiperda</i> (Smith)						x	
14	<i>Stenopelmatus</i> sp.	x						
14	<i>Systema s-litera</i> L.						x	
14	<i>Trialeurodes</i> spp.	x						
14	<i>Trichobaris trinotata</i> (Say)	x						
14	<i>Tymnes</i> sp.				x			
PUMPKIN (calabazas)								
14	<i>Acalymma faimairei</i> (Baly)	x						
43	<i>Acalymma pallipes theimei</i> Baly	x				x		
14	<i>Acalymma trivittata</i> (Mann.)					x		
14	<i>Acalymma vittata</i> (Fabr.)							x
14	<i>Agrotis</i> sp.						x	
14	<i>Anasa armigera</i> (Say.)	x						
29	<i>Anasa tristis</i> (DeG.)		x					x
29	<i>Anasa scorbutica</i> F.				x			
86	<i>Aphis gossypii</i> Glov.	x				x	x	x
14	<i>Aphis</i> spp.	x						
14	<i>Bemisia tabaci</i> (Genn.)					x		
14	<i>Calligrapha stillatipennis</i> Stål	x						
14	<i>Conotrachelus seniculus</i> LeC.					x		
14	<i>Corythucha</i> sp.					x		
43	<i>Diabrotica balteata</i> LeConte					x	x	x

		DISTRIBUTION BY COUNTRIES						
		CROP						
		PUMPKIN (calabazas)						
Weight Index	Insect Pest	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	<i>Diabrotica duodecimpunctata</i> (Fabr.)					x		
29	<i>Diabrotica</i> spp.	x						x
14	<i>Dialeurodes</i> spp.	x						
71	<i>Diaphania nitidalis</i> (Stoll)					x	x	x
14	<i>Diaphania</i> spp.	x						
14	<i>Epicauta carmelita</i> (Chevr.)	x						
71	<i>Epilachna borealis</i> (Fabr.)				x	x		x
29	<i>Estigmene acrea</i> (Drury)					x		
14	<i>Euphoris inda</i> (L.)	x				x		
14	<i>Eutetranychus banksi</i> (McG.)					x		
29	<i>Halticus bracteatus</i> (Say)					x		
14	<i>Leptoglossus</i> spp.	x						
14	<i>Liriomyza pictella</i> (Thoms.)	x						
29	<i>Liriomyza</i> sp.	x				x		
14	<i>Lytta eucera</i> (Chevr.)	x						
43	<i>Melittia cucurbitae</i> (Harris)					x	x	
14	<i>Melittia satyriniformis</i> Hbn.	x						
14	<i>Melittia</i> spp.	x						
14	<i>Murgantia histrionica</i> (Hahn.)	x						
43	<i>Prodenia</i> spp.					x	x	
14	<i>Psylliodes punctulatus</i> Melsh.	x						
14	<i>Tetranychus desertorum</i> Banks					x		
14	<i>Trialeurodes</i> spp.	x						
14	<i>Trichoplusia ni</i> (Hubner)						x	
RICE (arroz)								
14	<i>Aenolamia postica jugata</i> Fowler			x				
29	<i>Blissus leucopterus</i> (Say)			x			x	
14	<i>Carcinophora americana</i> (P. de B.)							x
14	<i>Caulopsis cuspidata</i> (Scudder)					x		
14	<i>Chaetocnema</i> sp.		x					
14	<i>Chilo loftini</i> Dyar	x						
14	<i>Chilo</i> spp.					x		
14	<i>Clastoptera</i> sp.				x			
29	<i>Cyrtomenus bergi</i> Froeshner						x	
29	<i>Cyrtomenus ciliatus</i> (P. de B.)						x	
14	<i>Diabrotica adelpha</i> Har.						x	
14	<i>Diabrotica balteasta</i> LeC.						x	
14	<i>Diabrotica</i> spp.		x					
43	<i>Diatraea saccharalis</i> (Fabr.)	x		x				
14	<i>Diatraea</i> (?) <i>saccharalis</i> (Fabr.)					x		

CROP

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	RICE (arroz)						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	<i>Diatraea</i> sp.		x					
14	<i>Doru lineare</i> (Esch.)					x		
71	<i>Elasmopalpus lignosellus</i> (Zell.)			x		x	x	
14	<i>Epitrix</i> sp.					x	x	
14	<i>Eumecosomyia nubila</i> Wied.				x			
57	<i>Eutheola bidentata</i> Burm.			x	x		x	
29	<i>Eutheola rugiceps</i> (LeC.)	x					x	x
14	<i>Feltia subterranea</i> (F.)						x	
14	<i>Gryllotalpa</i> sp.						x	
14	<i>Haimbachia quiriguella</i> Schauss					x		
14	<i>Hypselonotus concinnus</i> Dail				x			
43	<i>Lissorhoptrus simplex</i> (Say)	x				x		
14	<i>Lissorhoptrus oryzophilus</i> Kuschel						x	
43	<i>Mocis latipes</i> (Guenée)				x		x	
14	<i>Mormidea angustata</i> Stal	x						
43	<i>Mormidea pictiventris</i> Stal				x		x	
71	<i>Oebalus insularis</i> (Stål)		x	x	x		x	
57	<i>Oebalus pugnax</i> (Fabr.)		x	x			x	
29	<i>Oediopalpa guerini</i> Baly						x	x
43	<i>Phyllophaga</i> sp.	x				x		x
14	<i>Prepops latipennis</i> (Stål)				x			
14	<i>Prodenia</i> spp.					x		
14	<i>Prosapia bicincta</i> Fenn.						x	
14	<i>Pseudaletia unipuncta</i> (Haw.)						x	
14	<i>Pseudococcus boninsis</i> (Kuwana)							x
143	<i>Rupella albinella</i> (Cram.)	x		x	x	x	x	x
14	<i>Sphenophorus incurrens</i>					x		
14	<i>Sogata cubana</i> (Crawford)	x						
129	<i>Sogata orizicola</i> Muir	x		x	x	x	x	
100	<i>Spodoptera frugiperda</i> (J.E.Smith)			x		x	x	x
14	<i>Tibraca limbativentris</i> Stål					x	x	
SORGHUM (maicillo)								
29	<i>Acrolophus</i> sp.					x		
14	<i>Agrotis ipsilon</i> (Hufn.)	x						
14	<i>Agrotis malefida</i> Guen.	x						
29	<i>Agrotis</i> sp.						x	
29	<i>Aphis</i> sp.					x	x	
14	<i>Aprostocetus</i> sp.			x				
14	<i>Blapstinus</i> (?) <i>substriatus</i> Champ.				x			
14	<i>Celama sorghiella</i> (Riley)	x						
14	<i>Celama</i> sp.						x	
14	<i>Chilo</i> spp.	x						
14	<i>Chorizagrotis inconcinna</i> (Harv.)	x						

CROP

DISTRIBUTION BY COUNTRIES

		SORGHUM (maicillo)						
Weight Index	Insect Pest	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
14	Dalbulus spp.	x						
14	Diabrotica spp.	x						
14	Diatraea saccharalis (Fabr.)				x			
57	Elasmopalpus lignosellus (Zell.)	x				x	x	
14	Estigmene acrea (Drury)	x						
14	Eupelmus popa Girault			x				
14	Eurytoma sp.			x				
29	Heliothis zea (Boddie)	x		x				
14	Macroductylus spp.	x						
14	Melanoplus spp.	x						
57	Mocis latipes (Guenée)	x				x	x	
14	Nysius sp.	x						
14	Oebalus mexicanus (Sailer)	x						
14	Oebalus pugnax (Fabr.)	x						
14	Oligonychus spp.	x						
14	Phyllophaga spp.	x						
14	Prorachia daria (Druce)	x						
14	Prodenia sp.				x			
14	Rhopalosiphum maidis (Fitch)	x						
86	Spodoptera frugiperda (J.E.Smith)	x			x	x	x	
14	Sphenarium spp.	x						
14	Tetranychus spp.	x						
14	Zeadiatrea lineolata (Wlk.)				x			
14	Zeadiatrea (?) lineolata (Wlk.)					x		
14	Zeadiatrea spp.	x						
STORED GRAINS (granos almacenados)								
14	Acarus siro (L.)	x						
100	Acanthoselides obtectus (Say)	x			x	x	x	
14	Ahasverus advena (Waltl)						x	
14	Alphitobius diaperinus Panz.	x						
29	Alphitobius laevigatus F.					x	x	
57	Anagasta kuhniella (Zell.)	x		x			x	
43	Araecerus fasciculatus (Deg.)			x		x	x	
14	Bruchus pisorum (L.)	x						
14	Bruchus rufimanus Boh.	x						
71	Cadra cautella (Walk.)	x		x		x	x	
14	Callosobruchus maculatus (F.)						x	
14	Carpophilus hemipterus (L.)	x						
29	Cathartus quadricollis (Guérn.-Méneville)				x		x	
14	Colopterus (?) macropertus F.			x				
14	Colopterus (?) posticus F.			x				

CROP

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	STORED GRAINS (granos almacenados)						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
29	<i>Corcyra cephalonica</i> (Staint.)					x	x	
29	<i>Cryptolestes pusillus</i> (S.)	x					x	
14	<i>Dinarmus laticeps</i> (Ashm.)					x		
14	<i>Gnathocerus cornutus</i> Fabr.						x	
57	<i>Lasioderma serricorne</i> (Fabr.)	x		<u>x</u>			x	
14	<i>Lophocateres pusilla</i> (Klug)					x		
29	<i>Oryzaephilus mercator</i> (Fauvel)					x	x	
71	<i>Oryzaephilus surinamensis</i> (L.)	x		x		<u>x</u>	x	
71	<i>Plodia interpunctella</i> (Hbn.)	x		x	x	x	x	
43	<i>Prostephanus truncatus</i> (Horn)	x			x		x	
57	<i>Rhizopertha dominica</i> Fabr.	x			x	x	x	
86	<i>Sitophilus granarius</i> (L.)	x		x	<u>x</u>		<u>x</u>	
43	<i>Sitophilus oryzae</i> (L.)	x		x		x		
100	<i>Sitotroga cerealella</i> (Olivier)	x		x	<u>x</u>	<u>x</u>	x	
14	<i>Stator</i> sp.				x			
14	<i>Stephanopachys truncatus</i> (Horn)	x						
29	<i>Tenebrio molitor</i> L.			x			x	
57	<i>Tenebroides mauritanicus</i> (L.)				x	<u>x</u>	x	
86	<i>Tribolium castaneum</i> Hkst.	x		x		<u>x</u>	<u>x</u>	
57	<i>Tribolium confusum</i> DuVal	x			x		<u>x</u>	
14	<i>Tribolium</i> spp.	x						
57	<i>Zabrotes subfasciatus</i> (Boh.)	x				<u>x</u>	x	
SWEET POTATO (camote)								
14	<i>Agallia lingula</i> Vand.						x	
14	<i>Agriotes</i> sp.						x	
29	<i>Astura elevalis</i> Guénée						<u>x</u>	
14	<i>Castolus</i> sp.	x						
14	<i>Cylas formicarius elegantulus</i> (Sum.)	x						
14	<i>Cylas</i> sp.	x						
14	<i>Diabrotica adelpha</i> Harold						x	
29	<i>Diabrotica balteata</i> LeConte						<u>x</u>	
14	<i>Diabrotica porracea</i> Harold						<u>x</u>	
43	<i>Diabrotica</i> sp.	x				x	x	
14	<i>Graphocelphala sexlineata</i> (Sign.)						x	
14	<i>Halticus bracteatus</i> (Say)						x	
14	<i>Melanoplus littoralis</i> Roberts	x						
14	<i>Metriona bicolor</i> (Fabr.)	x						
14	<i>Nodonota irazuensis</i> Jac.						x	
14	<i>Omophoita aequinoctialis</i> L.						x	
14	<i>Phthia picta</i> (Drury)	x						

CROPS

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	SWEET POTATO (camote)					
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA
							PANAMA
14	Phthorimaea operculella (Zell.)		x				
14	Phyllophaga sp.	x					
14	Polygrammodes elevata (Fabr.)	x					
14	Polygrammodes histrionica	x					
29	Rhyssomatus sp.						x
14	Sibovia occatoria (Say)						x
14	Stenygra histrio Serv.	x					
14	Tetranychus bimaculatus Harvey						x
14	Tetranychus marianae Mc.G.					x	
	TOMATO (tomate)						
14	Acheta asimilis (Fabr.)						
14	Agallia lingula Vand.						x
14	Agrotis ipsilon (Hufn.)						x
14	Agrotis malefida Guenee						x
43	Agrotis repleta Wlk.			x			x
14	Agrotis sp.				x		
29	Aphis sp.					x	
43	Bemisia tabaci (Genn.)					x	x
14	Chaetocneme confinis Cr.			x			
14	Chaetocnema sp.			x			
14	Corythucha gossypii (F.)					x	
43	Diabrotica adelpha Har.			x			x
71	Diabrotica balteata LeC.	x		x		x	x
43	Diabrotica sp.	x					x
14	Dicyphus minimus (Uhl.)	x					
14	Disonycha glabrata Fabr.					x	
14	Disonycha sp.			x			
14	Elasmopalpus lignosellus (Zell.)			x			
14	Empoasca kraemeri R.&M.						x
14	Empoasca prona Dav.						x
14	Epicauta vitticollis Haag.				x		
43	Epitrix cucumeris (Harris)			x			x
29	Epitrix fuscata DuVal.						x
14	Epitrix spp.	x					
14	Faustinus apicalis (Faust.)					x	
14	Faustinus ovatipennis (Champ.)				x		
14	Faustinus rhombifer (Champ.)					x	
14	Frankliniella tritici (Fitch)	x					
14	Halticus sp.	x					
29	Halticus bracteatus (Say)	x					x
100	Heliothis zea (Boddie)			x	x	x	x
29	Heliothis virescens F.					x	

CROPS

DISTRIBUTION BY COUNTRIES

Weight Index	Insect Pest	TOMATO (tomate)						
		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
29	<i>Keiferia lycopersicella</i> (Busk.)	x				x		
14	<i>Lema trilineata</i> Olivier	x						
29	<i>Liriomyza</i> (?) <i>commelina</i> (Forst.)						x	
14	<i>Liriomyza munda</i> Frick	x						
14	<i>Liriomyza pusilla</i> Mg.						x	x
14	<i>Liriomyza</i> sp.			x				
14	<i>Leptoglossus phyllopus</i> (L.)							x
14	<i>Leptoglossus zonatus</i> (Dallas).						x	
14	<i>Loxostege similalis</i> (Guen.)	x						
29	<i>Manduca quinquemaculata</i> (Haw.)						x	x
57	<i>Manduca sexta</i> (Joh.)		x	x		x	x	
14	<i>Manduca</i> spp.	x						
14	<i>Melanagromyza</i> sp.			x				
14	<i>Myzus lycopersici</i> (Clarke)	x						
43	<i>Myzus persicae</i> (Sulzer)						x	x
43	<i>Nezara viridula</i> (L.)						x	x
14	<i>Oecleus infuscatus</i> Caldwell	x						
29	<i>Phthia picta</i> (Drury)		x	x				
14	<i>Phyllophaga</i> sp.					x		
14	<i>Phyrdenus divergens</i> Germar						x	
57	<i>Phyrdenus muriceus</i> Germar	x			x		x	x
14	<i>Pilemia periusalis</i> (Wlk.)							x
57	<i>Prodenia eridanea</i> (Gramer)			x			x	x
43	<i>Prodenia latifascia</i> Wlk.			x			x	
71	<i>Prodenia</i> sp.			x	x	x	x	
14	<i>Pyrota divirgata</i> (V.&P.)	x						
14	<i>Spodoptera frugiperda</i> (Smith)						x	
14	<i>Systema blanda</i> Melsh.	x						
29	<i>Systema</i> sp.			x			x	
14	<i>Tetraleurodes</i> sp.	x						
14	<i>Trialeurodes</i> sp.	x						
14	<i>Trichobaris championi</i> Barb.	x						
14	<i>Trichoplusia oxygramma</i> (Gug.)					x		
WATERMELON (sandia)								
29	<i>Acalymma pallipes theimei</i> (Baly)					x		
29	<i>Acalymma trivittata</i> (Mann.)					x		
14	<i>Agrotis</i> sp.						x	
129	<i>Aphis gossypii</i> Glov.	x		x		x	x	x
14	<i>Bemisia tabaci</i> (Genn.)					x		
14	<i>Conotrachelus seniculus</i> LeC.					x		
14	<i>Corythuca</i> sp.					x		
114	<i>Diabrotica balteata</i> LeConte	x				x	x	x
43	<i>Diabrotica duodecimpunctata</i> (Fab.)	x				x		

CROPS

DISTRIBUTION BY COUNTRIES

		WATERMELON (sandia)						
Weight Index	Insect Pest	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
29	Diabrotica undecimpunctata Mannerheim	x						
14	Diabrotica sp.							x
100	Diaphania nitidalis (Stoll)	x				x	x	x
43	Epilachna borealis (F.)					x		x
57	Estigmene acrea (Drury)	x		x		x		
14	Estigmene albida (Stretch)			x				
14	Eutetranychus banksi (McGregor)					x		
14	Gargaphia iridescens Champ.	x						
29	Halticus bracteatus (Say)					x		
14	Homalodisca liturata Ball	x				x		
43	Liriomyza spp.	x				x		
57	Melittia cucurbitae (Harris)					x	x	
29	Melittia sp.	x				x		
20	Myzus persicae (Sulzer)	x						
14	Oxygryllus ruginasus (LeC.)	x						
1	Prodenia spp.			x		x	x	
14	Tetranychus desertorum Banks					x		
14	Tetranychus spp.	x						
14	Trialeurodes sp.	x						
43	Trichoplusia ni (Hubn.)			x			x	
WHEAT (trigo)								
14	Blissus leucopterus (Say)	x						
29	Diabrotica balteata LeC.	x						
14	Epitrix cucumeris (Harr.)	x						
14	Macroductylus spp.	x						
29	Macrosiphum avenae (F.)	x						
14	Nysius ericae (Schilling)	x						
14	Petrobia latens (Muller)	x						
14	Phyllophaga spp.	x						
29	Schizaphis graminum (Randani)	x						

APPENDIX III

GENERAL LIST OF INSECTS

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Acalymma corrusca</i> Jacoby: V13 leaf beetle - cucurbitaceas			x	x			
<i>Acalymma fairmairei</i> (Baly): V13 leaf beetle - beans, squash	x	x		x	x	x	
<i>Acalymma pallipes theimeii</i> (Baly): V13 leaf beetle - squash	x	x		x	x	x	x
<i>Acalymma trivittata</i> (Mann.): V13 western striped cucumber beetle - squash cantaloupe, chayote, cucumber, watermelon					x		
<i>Acalymma vittata</i> (Fabr.): V13 striped cucumber beetle - watermelon, chayote, cucumber, squash, cantaloupe	x						x
<i>Acanthocephala femorata</i> (F.): Q6 stink bug - potato	x						
<i>Acanthocephala granulosa</i> Stal = <i>A. femorata</i> (F.)							
<i>Acanthocephala</i> sp.: Q6 stink bug - peppers (probably <i>femorata</i> (Fabr.))	x						
<i>Acanthoderes circumflexus</i> (Jacq-Duval): V12 mango borer - mango					x		
<i>Acanthoscelides breweri</i> Crotch = <i>A. obtectus</i> (Say)							
<i>Acanthoscelides fabae</i> Riley = <i>A. obtectus</i> (Say)							
<i>Acanthoscelides irresectus</i> Fahraeus = <i>A. obtectus</i> (Say)							
<i>Acanthoscelides obreptus</i> Bridwell: V7 bean weevil - beans, broad	x	x					x
<i>Acanthoscelides obsoletus</i> (Autores) = <i>A. obtectus</i> (Say) - bean weevil							
<i>Acanthoscelides obtectus</i> (Say): V7 bean weevil - stored grains	x	x		x	x	x	
<i>Acanthoscelides obvelatus</i> Bridwell: V7 bean weevil - parts of the bean	x						
<i>Acanthoscelides pallidipes</i> Fahraeus = <i>A. obtectus</i> (Say)							
<i>Acanthoscelides subelipticus</i> Wall = <i>A. obtectus</i> (Say)							
<i>Acanthoscelides varicornis</i> Motsch. = <i>A. obtectus</i> (Say)							
<i>Acarus siro</i> (L.): XXIV.14 grain mite - stored grains	x						

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Aceria sheldoni</i> (Ewing): XXIV.6 citrus bud mite - citrus		x					
<i>Acheta assimilis</i> (Fabr.): H4 field cricket - onion, beans, tomato, rice	x						x
<i>Achlyodes pallida</i> (Felder): U19 green citrus worm - citrus	x	x					
<i>Aconophora femoralis</i> Stål.: QQ16 no common name - papaya					x		
<i>Aconophora projecta</i> Funkh.: QQ16 green buffalo hopper - papaya	x						
<i>Aconophora pugionata</i> Germ.: QQ16 green buffalo hopper - mango	x			x			x
<i>Aconophora</i> sp.: QQ16 green buffalo hopper - papaya, avocado, citrus	x			x			
<i>Acrolophus</i> sp.: U47 no common name - corn, sorghum					x		
<i>Acromyrmex octospinosus</i> (Reich.): W14 ant - citrus						x	
<i>Acroplus</i> sp. - no common name - corn					x		
<i>Acrosternum marginatum</i> (Palis.): Q15 bean green stink bug - bean, tomato	x	x		x		x	x
<i>Acrosternum</i> sp.: Q15 cabbage green stink bug -cabbage	x						
<i>Acyrtosiphon pisum</i> (Harris): QQ2 pea aphid - bean and other vegetables		x					x
<i>Acysta persea</i> Heid.: Q20 lace bug - avocado	x						
<i>Aellopes</i> sp: U46 eggplant borer - eggplant	x						
<i>Aeneolamia postica</i> (Walk.): QQ4 spotted spittlebug - pasture and rice	x	x		x	x	x	
<i>Aeneolamia varia</i> (F.): QQ4 no common name - pastures					x		
<i>Aeneolamia</i> sp.: QQ4 no common name - pastures				x			
<i>Aethalion quadratum</i> Fowler: QQ16 green tree hopper - avocado	x	x				x	x
<i>Agallia barretti</i> Ball.: QQ6 leaf hopper - corn	x						
<i>Agallia modesta</i> Osborne and Ball.: QQ6 leaf hopper - pastures	x			x		x	x
<i>Agallia lingula</i> Vand.: QQ6 leaf hopper - sweet potato and tomato	x		x	x		x	

Scientific names, common names,
crops affected

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Agriotes mancus Say: V22 wheat wireworm - rice		x	x				
Agriotes sp.: V22 wireworm - potatoes, sweet potato, corn	x					x	
Agromyza inaequalis (Mall.) = Japanagromyza inaequalis (Mall.)							
Agromyza pusilla Meigen: XI cabbage leaf miner - cabbage		x					
Agromyza virens Loew. = Melanagromyza virens (Loew)							
Agrosoma akenalis Medler: QQ6 no common name	x	x					
Agrosoma bispinella Medler: QQ6 no common name	x	x	x	x		x	
Agrosoma corinoma Medler: QQ6 no common name		x		x			
Agrosoma cruciata (Sign.): QQ6 no common name						x	x
Agrosoma decepta Medler: QQ6 no common name	x						
Agrosoma exukanis Medler: QQ6 no common name	x						
Agrosoma glyphalis Medler: QQ6 no common name	x						
Agrosoma placetis Medler: QQ6 no common name		x			x	x	x
Agrosoma proxima (Sign.): QQ6 no common name		x	x	x			
Agrosoma pulchella (Guer.): QQ6 leaf hopper - potato	x					x	
Agrosoma syklis Medler: QQ6 no common name	x						
Agrosoma terebra Medler: QQ6 no common name	x						
All Agrosomas on this list have been classified as Agrosoma pulchella (Guer.)							
Agrotis ipsilon (Hufn.): U29 black cutworm - potato, cabbage, beets, carrot, lettuce, sorghum, tomato, corn	x	x				x	
Agrotis malefida Guenée.: U29 pale sided cutworm - garlic, corn, potato onion, cabbage, beans, lettuce, sorghum tomato	x	x	x	x	x	x	x

Scientific names, common names,
crops affected

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Agrotis repleta Wlk.: U29 cutworm - garlic, onion, lettuce, tomato	x	x	x			x	x
Agrotis sp.: U29 cutworm - beets, carrot, cucumber, squash sorghum, tomato, pepper, corn, watermelon		x				x	x
Ahasverus advena (Waltl.): V18 foreign grain beetle - stored grain						x	
Alabama argillacea (Hbn.): U29 cotton leaf worm - corn	x						
Aleurocanthus woglumi Ashby: QQ1 citrus blackfly - avocado, citrus, mango	x	x	x	x	x	x	x
Aleurodes tabaci Gennadius = Bemisia tabaci (Gennadius)							
Aleurothrixus howardi (Q) = Aleurothrixus floccosus (Mask)							
Aleurothrixus floccosus (Mask): QQ1 wooly whitefly - citrus	x					x	
Aleyrodes inconspicua Quaintance = Bemisia tabaci (Gennadius)							
Aleyrodes sp.: QQ1 whitefly - potato	x				x		
Alphitobius diaperinus Panz.: V46 lesser mealworm - storage grain	x						
Alphitobius laevigatus F.: V46 no common name - stored grain					x	x	
Alphitobius mauritanicus Curt. = A. diaperinus Panz.							
Altica amethystina (Olivier): V13 flea beetle - beans	x			x			
Altica patruelis (Har.): V13 flea beetle - beans	x						
Altica sp.: V13 leaf beetle - beans				x			
Amathes c-nigrum (L.): V29 spotted cutworm - potato, corn						x	
Amphorophora sonchi (Oestl.) = Hyperomyzus lactucae (L.)							
Amphorophora sp.: QQ2 no common name - beans	x						
Amycles anthracinae (Walker): Ctenuchidae wooly worm - bananas, plantain					x		
Anagasta kuheniella (Zell.): U36 Mediterranean flour moth - stored grain	x						

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Anasa andresii Guerin: Q6 bean bug - beans, corn	x	x				x	x
Anasa armigera (Say): Q6 horned squash bug - squash	x						
Anasa lugens Stål. = Anasa andresii Guerin							
Anasa scorbutica (F): Q6 no common name - squash				x			
Anasa tristis (DeG.): Q6 squash bug - squash				x			
Anasa uhleri Stål.: Q6 squash bug - corn	x						
Anasa spp.: Q6 squash bug - squash	x						
Anastrepha antunesi Costa Lima: X35 fruitfly - citrus, mangos							x
Anastrepha distincta Green: X35 fruitfly - mangos	x	x	x	x	x	x	x
Anastrepha fraterculus Wied: X35 fruitfly - citrus, mangos, papaya	x	x	x	x	x	x	x
Note: The fraterculus of Central America is not the true fraterculus of South America. Ours is probably a new specie. It is found in almonds, rose apples and sometimes in apricots.							
Anastrepha fraterculus Green (in part, not Wiedemann) = A. distincta Green							
Anastrepha ludens (Loew): X35 Mexican fruitfly - avocado, citrus, mango papaya, annona	x	x	x	x	x	x	
Anastrepha manihoti Costa Lima: X35 Yuca fruitfly - cassava							x
Anastrepha mombinpraeoptans Sein: X35 West Indian fruitfly - jobos, mango, guava, rarely in citrus, marañon, cheri- moya, carambola, mamey, pomarosa	x	x	x	x	x	x	x
Anastrepha serpentina (Wied.): X35 fruitfly - caimito, zapote, orange, annona, mango	x	x	x	x	x	x	x
Anastrepha silvai Costa Lima = Anastrepha distincta Green							
Anastrepha striata Schiner: X35 fruitfly - guava, mango, zapote	x	x	x	x	x	x	x
Anastrepha sp.: X35 fruitfly - avocado, citrus, papaya			x	x			

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Andrector = Cerotoma							
Andrector atrofasciatus Jac. = Cerotoma atrofasciata (Jac.)							
Andrector rogersi Jac. = Cerotoma ruficornis rogersi Jac.							
Andrector ruficornis Oliv. = Cerotoma ruficornis (Oliv.)							
Andrector trifurcatus Forster = Cerotoma trifurcata (Forster.)							
Anomala discoidalis Bates: V41 Maya beetle - citrus	x						
Anomala sp.: V41 maya beetle - avocado, pastures, mango	x	x	x	x			
Anomis editrix (Guen.): U29 no common name - corn	x						
Anthianthe expansa (Germ.): QQ16 green membracid - pepper, cantaloupe	x	x	x	x	x	x	x
Anthonomus aeneotinctus Champ. = A. eugenii Cano							
Anthonomus eugenii Cano: V19 pepper weevil - pepper, eggplant	x	x	x				
Anticarsia gemmatilis (Hüb.): U29 velvetbean caterpillar - beans	x					x	x
Antonina graminis (Maskell): QQ18 Rhodes-grass scale - pastures	x	x		x			x
Aonidiella aurantii (Maskell): QQ11 California red scale - bananas, oranges limes	x	x		x	x	x	x
Aonidiella citrina (Coq.): QQ11 yellow scale - citrus		x			x		
Apate monacha Fabr.: V5 twig borer - avocado	x						
Aphis brassicae Linne = Brevycorine brassicae (Linne)							
Aphis citricidus (Kirkaldy) = Toxoptera citricida (Kirkaldy)							
Aphis gossypii Glov.: QQ2 cotton or melon aphid - squash, citrus, cantaloupe and malvaceous plants, egg- plant, beets, cabbage, carrot, chayote, cucumber, lettuce, watermelon	x	x	x	x	x	x	x
Aphis maidis Fitch = Rhopalosiphum maidis (Fitch)							
Aphis rumicis L.: QQ2 black aphid - beans	x						

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Aphis spiraecola</i> Patch: QQ2 spirea aphid - citrus, avocado, carrots	x		x	x	x	x	
<i>Aphis</i> sp.:QQ2 aphid - papaya, cantaloupe, chayote, cucumber, eggplant, squash, sorghum, tomato	x		x	x	x		
<i>Apion aurichalceum</i> Wagn.: V19 weevil - beans	x						
<i>Apion germanum</i> Sharp: V19 German weevil - beans	x						
<i>Apion godmani</i> Wagner: V19 green-bean weevil - beans	x	x	x				
<i>Apion perpilosum</i> Wagn.: V19 weevil - beans	x						
<i>Apion praeditum</i> Sharp: V19 weevil - beans	x	x					
<i>Aprostocetus</i> sp.: W7 chalcid - this is a parasitical insect			x				
<i>Araecerus fasciculatus</i> (Deg.): V3 coffee bean weevil - coffee, cacao, corn, stored grains in general	x	x	x	x	x	x	x
<i>Arhyssus lateralis</i> (Say): Q6 stink bug - no economic importance	x						
<i>Ascia monuste</i> (L.): U37 cabbage butterfly - cabbage, lettuce	x	x	x	x	x	x	x
<i>Aspidiotus cameliae</i> Signoret = <i>Hemiberlesia</i> <i>rapax</i> (Comst.)							
<i>Aspidiotus perniciosus</i> (Comtk.): QQ11 San Jose scale - citrus	x						
<i>Aspidiotus</i> sp.: QQ11 scale - mango	x				x		
<i>Astura elevalis</i> Guenee: U42 sweet potato worm - sweet potato						x	
<i>Atethmia subusta</i> Hubn.: U29 cutworm - corn	x	x	x	x	x	x	x
<i>Atta cephalotes</i> L.: W14 harvester ant - citrus, almost general					x	x	
<i>Atta fervens</i> Say = <i>Atta texana</i> (Buckley) before 1959							
<i>Atta mexicana</i> (F. Smith): W14 harvester ant - almost general	x		x				
<i>Atta sexdens</i> (L.): W14 harvester ant - citrus, almost general						x	x

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Atta texana</i> (Buckley): W14 harvester ant - pepper, papaya	x						
<i>Atta</i> sp.: W14 harvester ant - bananas, plantain, potato citrus, corn, onion, almost general	x	x	x	x	x	x	x
<i>Attalus viridivittatus</i> Champ.: V29 no common name - beneficial, does not attack plants	x	x	x	x	x	x	x
<i>Aulacaspis mangifera</i> Green = <i>A.</i> <i>tubercularis</i> Newst.							
<i>Aulacaspis tubercularis</i> Newst.: QQ11 tuberculate scale of mango - mango		x	x				
<i>Autographa brassicae</i> = <i>Trichoplusia ni</i> (Hbn.)							
<i>Azya luteipes</i> Muls: V16 ladybird beetle - beneficial	x	x		x	x	x	x
<i>Baris strenua</i> LeConte: V19 weevil - beans, corn, pastures	x	x					
<i>Bemisia tabaci</i> (Genn.): QQ1 sweet potato whitefly - cotton, citrus, cantaloupe, rice, beans, corn, cassava, chayote, cucumbers, eggplant, papaya, squash, tomato, watermelon	x	x	x	x	x	x	
<i>Blapstinus substriatus</i> Champ.: V46 no common name - sorghum				x			
<i>Blissus leucopterus hirtus</i> Montandon: Q10 hairy chinch bug - corn				x			
<i>Blissus leucopterus</i> (Say): Q10 chinch bug - corn, rice, wheat	x	x	x			x	
<i>Bothrophorella nigra</i> (Stål): Q11 black chinch bug - mango				x			
<i>Brachyacantha bistrispustulata</i> (F.): V16 six spotted beetle - citrus				x			
<i>Brachystola</i> sp.: H1 grasshopper - beans	x						
<i>Brevicoryne brassicae</i> (L.): QQ2 cabbage aphid - cabbage	x	x	x	x	x	x	x
<i>Brochymena quadripustulata</i> (Fab.): Q15 avocado stinkbug - avocado (the specie may be in error. <i>B. haedula</i> Stål is known of Mexico and Guatemala)	x	x					
<i>Bruchobius laticeps</i> Ashm. = <i>Dinarmus</i> <i>laticeps</i> (Ashm.)							

Scientific names, common names,
crops affected

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Bruchus obtectus Say = Acanthoscelides obtectus (Say)							
Bruchus pisorum (L.): V7 pea weevil - peas	x						
Bruchus rufimanus Boheman: V7 broad bean weevil - stored grains	x						
Bulimulus corneus (Sowerby): L snail - cabbage, lettuce					x		
Cactophagus bifasciatus Gyll. = C. validirostris Gyll.							
Cactophagus validirostris Gyll: V19 weevil - bananas	x	x		x			x
Cadra cautella (Wlk.): U36 almond moth - stored products	x		x		x	x	
Calendra = Sphenophorus							
Caligo memnon Fldr.: no common name - bananas					x		
Caliothrips fasciatus (Pergande): P4 thrips - beans, cantaloupe, watermelon	x	x					
Caliothrips phaseoli (Hood): P4 bean thrips - beans	x						
Calligrapha multiguttata Stål: V13 leaf beetle - corn	x	x					
Calligrapha labyrinthica Stål: V13 leaf beetle - beans	x						
Calligrapha stillatipennis Stål: V13 leaf beetle - squash	x						
Callosobruchus chinensis (L.): V7 Japanese weevil - dried beans							x
Callosobruchus maculatus (F.): V7 cowpea weevil - stored dried beans	x	x		x		x	
Camptodes chiriquensis Sharp.: V35 weevil - bananas				x			
Camptoprosopella dolorosa (Will.): DIPT lauxaniidae - no common name, captured on citrus	x						
Canthon viride (Beauv.): V41 manure beetle - was found on potato foliage. Generally lives in manure.	x	x		x	x	x	
Carcinophora americana (P. de B.): I2 earwig - rice						x	
Careyon gonegra (F.): V7 tamarind weevil - tamarind	x						

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Carneocephala flaviceps (Riley): QQ6 yellow-headed leafhopper - beans	x						
Carpocapsa pomonella (L.): U33 coddling moth - potato	x						
Carpolonchea sp. = Silba sp. Carpophilus hemipterus (L.): V35 dried-fruit beetle - stored fruits	x						
Carpophilus latinasus Say: V35 grain beetle - this species is doubtful. This name is not in any catalogue.							
Castnia licus (Drury) LEP: Castniidae banana stem borer - bananas, plantains						x	
Castniomera humboldti (Boisduval) LEP: Castniidae - no common name - bananas, plantains						x	
Castolus sp.: Q18 predator bug	x						
Cathartus quadricollis (Guérin-Ménéville): V18 - square-necked grain beetle stored grain				x		x	
Catolethrus longulus Boh.: V19 weevil - corn	x	x			x		x
Catolethrus tenuirostris Champion = C. longulus Boh							
Catorhintha guttula (Fabr.): Q6 stink bug - corn	x						
Catorhintha selector Stål: Q6 stink bug - corn	x						
Caulophilus latinasus Say: V19 Latin broad-nosed weevil - avocado	x						
Caulopsis cuspidata: H9 (Scudder) long horned grasshopper - rice					x		
Celama sorghiella (Riley): U29 sorghum-head worm - sorghum	x						
Celama sp.: U29 sorghum-head worm - sorghum						x	
Celerio lineata (Fabr.): U46 white-lined sphinx - corn	x						
Centrinaspis lentiginosus (Boh.) = Geraeus lentiginosus (Boh.)							
Centrinaspis tonsilis Boh.: V19 weevil - corn, wheat, pastures	x					x	
Cephisus siccifolius (Wlk.): QQ4 spittlebug - avocado						x	

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Ceramidia virides</i> (Druce) - LEP: Amatidae no common name - bananas, plantains						x	
<i>Ceratitis capitata</i> (Wied.): X35 Mediterranean fruitfly - orange, coffee mango, tomato, guava, papaya					x	x	x
<i>Ceresa vacca</i> (Fowler) = <i>Vestistilus vacca</i> (Fowler)							
<i>Ceroplastes florindensis</i> Comstock: QQ8 Florida wax scale - citrus, avocados, mango, guava	x	x		x	x	x	x
<i>Cerotoma atrofasciata</i> (Jac.): V13 leaf beetle - beans	x	x		x			
<i>Cerotoma ruficornis</i> Olivier: V13 leaf beetle - corn, beans	x	x	x	x	x	x	x
<i>Cerotoma rogersi</i> (Jac.) = <i>Cerotoma rufi-</i> <i>cornis rogersi</i> Jac. - see <i>ruficornis</i> Olivier							
<i>Cerotoma trifurcata</i> Forster: V13 bean leaf beetle - beans		x					
<i>Cerotoma</i> sp.: V13 leaf beetle - beans, corn				x			x
<i>Chaetocnema confinis</i> Cr.: V13 sweet potato flea beetle - tomato			x				
<i>Chaetocnema</i> sp.: V13 flea beetle - beans, rice, tomato, corn - could be <i>divergens</i> Baly	x	x	x	x			
<i>Chalepus signaticollis</i> Baly = <i>Xenochalepus signaticollis</i> (Baly)							
<i>Chauliognathus basalis</i> LeCont.: V10 flower beetle - corn, pastures - these species are pollen feeders and may be more beneficial than harmful	x						
<i>Chauliognathus hastatus</i> Garh. = Ch. <i>limbicollis</i> Lec.							
<i>Chauliognathus limbicollis</i> LeCont.: V10 flower beetle - corn, beans, pastures	x	x					
<i>Chauliognathus opacus</i> LeConte = C. <i>limbicollis</i> LeC.							
<i>Chauliognathus</i> spp.: V10 flower beetle - corn, beans, pastures	x	x	x	x	x	x	x
<i>Chilo loftini</i> Dyar: U8 rice borer - rice	x	x					
<i>Chilo</i> spp.: U8 rice borer - rice, sorghum	x				x		
<i>Chilocorus cacti</i> (L.): V16 no common name - citrus				x			

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Chilocorus sp.: V13 leaf beetle - corn	x						
Chionaspis citri Comotoch = Unaspis citri (Comstock)							
Chionaspis sp.: QQ11 no common name - papaya							x
Chlorochroa ligata (Say) = Pitedia ligata (Say)							
Chlorotettix emarginatus Baker: QQ6 leaf hopper - corn	x	x	x	x	x	x	x
Chlosyne sp.: U31 beet butterfly - beet			x				
Chorizagrotis inconcinna (Harv.): U29 cutworm - corn, sorghum	x						
Chrysobothris sp.: V8 mango buprestid - mango							x
Chrysomphalus aonidum (L.): QQ11 Florida red scale - citrus, bananas	x	x	x	x	x	x	x
Chrysomphalus bifasciculatus Ferris: QQ11 no common name - citrus	x						
Chrysomphalus dictyospermi (Morg.): QQ11 dictyospermum scale - citrus, avocados, mangos	x	x	x	x	x	x	x
Chrysomphalus personatus Comstock = Mycetaspis personata (Comstock)							
Cicadella areolata (Sign.) = Enythrogonia areolata (Sign.)							
Cicadella occatoria Say = Sibovia occatoria (Say)							
Cicadella pulchella (Guer.) = Agrosoma pulchella (Guer.)							
Cicadella sexlineata (Sign.) = Graphoce- phala sexlineata (Sign.)							
Cicadella sp.: QQ6 leaf hopper - papaya			x				
Circulifer tenellus (Baker): QQ6 beet leaf hopper - beets, beans	x	x	x				
Cirphis unipuncta Haw. = Pseudaletia unipuncta (Haw.)							
Cixius sp.: QQ13 no common name - pastures	x						
Clastoptera spp.: QQ4 spittlebug - rice	x	x	x	x	x	x	x

Scientific names, common names crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Cleistolophus sp.: V19 weevil - corn				x			
Coccus hemispherica (Targ.) = Saissetia coffeae (Walker)							
Coccus hesperidum L.: QQ8 brown soft scale - citrus, avocado, bananas, pineapple	x	x	x	x	x	x	x
Coccus mangiferae (Green): QQ8 mango scale - citrus, mango, avocado	x	x	x	x	x	x	x
Coccus viridis (Green): QQ8 green scale - coffee, citrus, guava	x	x	x	x	x	x	x
Colaspis hypochlora Lefevre bean colaspis - beans	x						
Colaspis prasina Lefevre: V13 blue leaf beetle - potato, beans, eggplant	x	x	x	x	x	x	x
Colapsis sp.: V13 leaf beetle - corn							x
Colias eurytheme Boisduval: U37 alfalfa caterpillar - pastures, fodder	x						
Colimona punctulata (Sign.): QQ6 punctate leafhopper - corn	x						
Colopterus macropertus (F.): V35 weevil - stored grain			x				
Colopterus posticus (Erichson): V35 weevil - stored grain			x				
Collarina oleosa: V13 leaf beetle - beans			x				
Collops femoratus Schffr.: COL Malachiidae no common name - beneficial	x						
Collops paradoza Champ.: COL Malachiidae no common name - beneficial	x	x	x	x	x	x	x
Collops quadrimaculata (Fabr.): COL Malachiidae - no common name - beneficial	x						
Collops vittata (Say): COL Malachiidae no common name - beneficial	x						
Conopia sp: U1 moth - avocado, papaya			x				
Conotrachelus aguacatae Barber: V19 avocado weevil - avocado					x		
Conotrachelus perseae Barber: U19 avocado weevil - avocado	x	x		x		x	x
Conotrachelus seniculus LeC.: V19 chayote weevil - cantaloupe, watermelon, chayote, cucumbers, squash					x		

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Contarinia sorghicola</i> (Coq.): X6 sorghum midge - sorghum	x						
<i>Copitarsia consueta</i> Walker: U29 cabbage-heart worm - cabbage, potato	x						
<i>Copitarsia turbata</i> (H&S): U29 moth - pastures, onion, potato	x						
<i>Copitarsia</i> spp.: U29 moth - cabbage, potato	x						
<i>Coptotermes niger</i> Snyder: K3 avocado termite - avocado					x		
<i>Copturomimus hustachei</i> Kissinger: V19 weevil - avocado						x	
<i>Copturomimus perseae</i> (Gun.): V19 weevil - avocado	x					x	
<i>Copturus aguacate</i> Kissinger: V19 branch borer - avocado	x						
<i>Copturus constrictus</i> Chevr.: V19 weevil - avocado	x					x	x
<i>Copturus neohispanicus</i> Heller.: V19 weevil - avocado	x		x				
<i>Copturus perseae</i> (Gun.) = <i>Copturomimus</i> <i>perseae</i> (Gun.)							
<i>Copturus</i> sp.: V19 weevil - avocado	x	x	x	x	x	x	x
<i>Corcyra cephalonica</i> (Staint.): U12 Australian dried-fruit bug - grains This is an Australian species if found in Central America it has been intro- duced					x	x	
<i>Coreocoris confluentus</i> Say = <i>C. fuscus</i> (Thumb.)							
<i>Coreocoris fuscus</i> (Thumb.): Q6 stink bug - potatoes						x	x
<i>Corthylus nudus</i> Schedl: V12 trunk and branch scolytid - avocado	x						
<i>Corythucha gossypii</i> (F.): Q20 cotton lace bug - bananas, beans, tomato, eggplant					x		
<i>Corythucha</i> sp.: Q20 lace bug - cantaloupe, chayote, avocado, cucumber, squash, watermelon	x				x		
<i>Cosmopolites sordidus</i> Germar: V19 banana root borer - banana, plantain	x	x	x	x	x	x	x
<i>Cossonus bulbirostris</i> Perty = <i>C. corticalis</i> Fab.							

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Cossonus corticalis Fab.: V19 weevil - avocado, papaya - It is a leaf feeder but of no economic importance	x	x	x	x	x	x	x
Cossonus reticulatus Sturm. = C. corticalis Fab.							
Cossonus sulcirostris Boheman = C. corticalis Fab.							
Cossonus sp.: V19 weevil - avocado	x						
Cotinis mutabilis G. & P.: V41 green beetle - pineapple, corn, citrus	x	x	x				
Crambus sp.: U8 root webworm - corn		x					
Creontiades rubrinervis (Stål): Q11 stinkbug - potato	x	x		x		x	
Criphula fasciata (Dist.): Q10 stinkbug - corn	x	x					x
Cycloneda immaculata Fabr. = C. sanguinea L.							
Cycloneda polonica Hampe = C. sanguinea L.							
Cycloneda sanguinea L.: V16 ladybird beetle - beneficial	x	x	x	x	x	x	x
Cryptolestes pusillus (S.): V18 weevil - stored grain	x				x	x	
Cycloneda steini Muls. = C. sanguinea L.							
Cylas formicarius elegantulus (Sum.): V19 sweet potato weevil - sweet potato	x				x		
Cyrtomenus bergi Froeshner HEM: cydnidae no common name - rice						x	
Cyrtomenus ciliatus (P. de B.): HEM: Cydnidae - no common name - rice						x	
Cyrtopeltis notatus (Distant): Q11 no common name - tomato	x						
Dalbulus eliminatus (Ball): QQ6 leafhopper - corn	x						
Dalbulus maidis (D. & W.): QQ6 leafhopper - corn	x	x	x	x	x	x	x
Dalbulus sp.: QQ6 leafhopper - corn, sorghum	x						
Dendrobias quadrimaculata Dupont = D. mandibularis Serv.							
Dendrobias mandibularis Serv.: V12 stem borer - papaya, citrus	x	x		x			

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Diabrotica adelpha</i> Harold: V13 striped leaf beetle - beans, potato rice, sweet potato, tomato	x	x	x		x	x	x
<i>Diabrotica alternans</i> Sturm = <i>D. corrusca</i> Harris							
<i>Diabrotica balteata</i> LeConte: V13 banded cucumber beetle - corn, rice, beans, alfalfa, potato, squash, tomato, cucumbers, wheat, onions, bananas, beets, cantaloupe, chayote, eggplant, sweet potato, watermelon	x	x	x	x	x	x	x
<i>Diabrotica biannularis</i> Harold: V13 two-ringed leaf beetle - squash, corn	x			x			
<i>Diabrotica corrusca</i> Harris: V13 leaf beetle - potato	x	x		x	x	x	x
<i>Diabrotica decolor</i> Erich: V13 leaf beetle - beans							x
<i>Diabrotica dissimilis</i> Jacoby: V13 leaf beetle - corn, pastures (alfalfa)	x	x			x		x
<i>Diabrotica duodecimpunctata</i> (Fab.): V13 12-spotted cucumber beetle - beans, cantaloupe, chayote, cucumber, squash, potato, watermelon	x	x	x		x		
<i>Diabrotica fairmairei</i> Baly = <i>Acalymma</i> <i>fairmairei</i> (Baly)							
<i>Diabrotica fuscomaculata</i> Jacoby = <i>D.</i> <i>viridula</i> Fab.							
<i>Diabrotica litterata</i> (Sahlb.): V13 leaf beetle - beans					x		
<i>Diabrotica longicornis</i> (Say): V13 northern corn root worm - corn, usually attacking the root system	x	x					
<i>Diabrotica nigrofasciata</i> Jacoby: V13 leaf beetle - beans	x	x	x	x	x	x	x
<i>Diabrotica nigrolineata</i> Jacoby: V13 leaf beetle - beans	x	x	x				
<i>Diabrotica nummularis</i> Harold: V13 leaf beetle - potato	x			x		x	x
<i>Diabrotica oberthuri</i> Baly = <i>D. nigroli-</i> <i>neata</i> Jacoby							
<i>Diabrotica ocellata</i> Chev.: V13 ocellated leaf beetle - beans				x			
<i>Diabrotica optiva</i> Erickson = <i>D. viridula</i> Fab.							

Scientific names, common names,
crops affected

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Diabrotica ornatula</i> Baly = <i>D. viridula</i> Fab.							
<i>Diabrotica porracea</i> Harold: V13							
leaf beetle - potato, sweet potato	x	x			x	x	x
<i>Diabrotica pulchella</i> (Jacq. & DuVal): V13							
leaf beetle - pastures	x						
<i>Diabrotica sexmaculata</i> Baly: V13							
6-spotted leaf beetle - pastures	x	x					
<i>Diabrotica soror</i> LeConte: V13							
leaf beetle - cantaloupe	x						
<i>Diabrotica theimei</i> Weise = <i>Acalymma theimei</i> Jac.							
<i>Diabrotica tibialis</i> Jacoby: V13							
leaf beetle - bananas, potato				x	x		
<i>Diabrotica trivittata</i> Mann = <i>Acalymma trivittata</i> (Mann.)							
<i>Diabrotica undecimpunctata</i> Mannerheim: V13							
western spotted cucumber beetle - beans							
cantaloupe, pastures, eggplant, cucumber							
watermelon	x						
<i>Diabrotica undecimpunctata tenella</i> LeC.:V13							
leaf beetle - corn					x		
<i>Diabrotica variabilis</i> Jacoby: V13							
leaf beetle - beans	x	x		x	x	x	x
<i>Diabrotica venalis</i> Erich.: V13							
leaf beetle - beans							x
<i>Diabrotica viridula</i> Fab.: V13							
leaf beetle - beans, bananas		x	x	x	x	x	x
<i>Diabrotica vittata</i> (Fabr.) = <i>Acalymma vittata</i> (Fabr.)							
<i>Diabrotica</i> sp.: V13							
leaf beetle - beans, cantaloupe, chayote,							
cucumber, eggplant, potato, rice, squash,							
sorghum, tomato, sweet potato, watermelon	x	x	x	x	x	x	x
<i>Diacrisia virginica</i> (Fabr.): U2							
yellow woolly bear - beans	x						
<i>Dialeurodes citri</i> (Ashmead): QQ1							
citrus whitefly - citrus		x	x				
<i>Dialeurodes citrifolii</i> (Morgan): QQ1							
cloudy-winged whitefly - citrus							
<i>Dialeurodes</i> spp.: QQ1							
whitefly - squash	x						
<i>Diaphania hyalinata</i> (L.): U42							
melon worm - watermelon	x			x			

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Diaphania nitidalis</i> (Stoll): U42 pickle worm - cantaloupe, squash, chayote, cucumber, eggplant, watermelon	x		x		x	x	x
<i>Diaphania</i> spp.: U42 borer - cucumber, squash, watermelon	x						x
<i>Diatraea crambidoides</i> (Grote): U8 borer - corn	x						
<i>Diatraea lineolata</i> (Wlk.) = <i>Zeadiatraea</i> <i>lineolata</i> (Wlk.)							
<i>Diatraea magnifactella</i> Dyar: U8 stem borer - corn (prefers sugarcane, rarely round in corn)	x						
<i>Diatraea saccharalis</i> (Fabr.): U8 sugarcane borer - sugarcane, corn, rice, sorghum	x	x	x	x	x	x	x
<i>Diatraea zeacolella</i> Dyar = <i>Diatraea</i> <i>crambidoides</i> (Grote)							
<i>Diatraea</i> sp.: U8 stem borer - rice, corn		x					
<i>Dictyla monotropidia</i> (Stål.): Q20 bean lace bug - beans					x		
<i>Dicyphus minimus</i> (Uhl.) = <i>Cyrtopeltis</i> <i>notatus</i> (Distant)							
<i>Dikraneura carneola</i> Stål: QQ6 no common name - corn	x						
<i>Dikraneura</i> sp.: QQ6 leafhopper - beans							x
<i>Dinarmus laticeps</i> (Ashm.): W. Pteromalidae bruchid parasite - stored grain					x		
<i>Diphaulaca aulica</i> Oliv: V13 leaf beetle - beans	x						
<i>Diphaulaca meridae</i> Bar.: V13 leaf beetle - beans						x	x
<i>Diphaulaca panamae</i> Barber: V13 leaf beetle - beans						x	x
<i>Diphaulaca wagneri</i> Har.: V13 leaf beetle - beans	x	x			x	x	
<i>Diphaulaca</i> sp.: V13 leaf beetle - beans	x						
<i>Diplotaxis aenea</i> Blanch.: V41 no common name - beans	x						
<i>Diplotaxis pauperata</i> Burm. = <i>D. aenea</i> Blanch.							

Scientific names, common names,
crops affected

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Diploptaxis simplex</i> Blanch. = <i>Diploptaxis aenea</i> Blanch.							
<i>Discodon dubium</i> Gorh.: V10 no common name - corn	x						
<i>Discodon inconstans</i> Champ = <i>D. dubium</i> Gorh							
<i>Discodon normale</i> Gorh: V10 no common name - potato, alfalfa	x	x					
<i>Disonycha alternata</i> Latr. = <i>D. glabrata</i> Fabr.							
<i>Disonycha glabrata</i> Fabr.: V13 no common name - tomato	x	x		x	x		x
<i>Disonycha tomentosa</i> Fabr. = <i>D. glabrata</i> Fabr.							
<i>Disonycha</i> sp.: V13 leaf beetle - beans, tomato					x		
<i>Doru lineare</i> (Esch.):II earwig - rice, sweet potato					x		
<i>Draeculacephala clypeata</i> Osb.: QQ6 leafhopper - pastures	x	x	x	x	x	x	x
<i>Draeculacephala lenticula</i> Ball = <i>Draeculacephala clypeata</i> Osb.							
<i>Draeculacephala minerva</i> Ball: QQ6 leafhopper - beans, pastures	x	x	x	x	x	x	x
<i>Draeculacephala portola</i> Ball: QQ6 leafhopper - corn, potato	x			x			
<i>Drasterius elegans</i> (F.): V22 wireworm - corn		x					
<i>Drosophila melanogaster</i> Mg.: X14 vinegar fly (attacks fruit which has pressure splits or has been damaged by other insects)	x	x	x	x	x	x	x
<i>Dysdercus mimulus</i> Hussey: Q17 Arizona cotton stainer - potato						x	
<i>Dysmicoccus brevipes</i> (Ckll.): QQ18 pineapple mealybug - coffee, pineapple, citrus	x	x	x	x	x	x	x
<i>Eantis pallida</i> Watson = <i>Achlyodes pallida</i> (Felder)							
<i>Edessa confusionata</i> Breddin: Q15 no common name - beans	x						
<i>Elasmopalpus lignosellus</i> (Zell.): U36 lesser cornstalk borer - beans, corn, . . . sorghum, pastures, rice tomato	x		x		x		

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Empoasca abrupta</i> DeLong: QQ6 western potato leafhopper - beans	x						
<i>Empoasca brachypennis</i> Gon.: QQ6 leafhopper - beans	x						
<i>Empoasca callera</i> Del. & Gue.: QQ6 leafhopper - beans	x						
<i>Empoasca canda</i> R. & M.: QQ6 leafhopper - beans				x			
<i>Empoasca difficilis</i> Gon.: QQ6 leafhopper - beans	x						
<i>Empoasca fabae</i> (Harr.) in Central America = <i>Empoasca krameri</i> R. & M.							
<i>Empoasca hastosa</i> R. & M.: QQ6 leafhopper - beans	x						x
<i>Empoasca guevarai</i> Gon.: QQ6 leafhopper - beans	x						
<i>Empoasca krameri</i> R. & M.: QQ6 leafhopper - corn, potato, beans	x	x	x	x	x	x	x
<i>Empoasca originalis</i> Gon.: QQ6 leafhopper - beans	x						
<i>Empoasca papayae</i> Oman: QQ6 papaya leafhopper - papaya				x		x	x
<i>Empoasca phaseola</i> Oman: QQ6 leafhopper - beans	x		x			x	
<i>Empoasca prona</i> DeLong & Davidson: QQ6 leafhopper - beans, tomato	x					x	
<i>Empoasca rumexa</i> Dav. & Del.: QQ6 leafhopper - beans	x						
<i>Empoasca</i> sp.: QQ6 leafhopper - beans, potato, beets, carrot	x	x	x	x	x	x	x
<i>Endalus</i> sp.: V19 weevil - pastures, beans	x						
<i>Entylia gemmata</i> Germ.: QQ16 green treehopper - avocado	x	x					
<i>Eotetranychus lewisi</i> (McGr.): XXIV.14 mite - papaya			x				
<i>Eotetranychus</i> sp.: XXIV.14 mite - papaya			x				
<i>Epagriopsis inaequalis</i> Champ. = <i>Epicaerus</i> <i>inaequalis</i> (Champ.)							
<i>Ephestia cautella</i> (Wlk.) = <i>Cadra cautella</i> (Wlk.)							
<i>Ephestia kühniella</i> Zell. = <i>Anagasta</i> <i>kühniella</i> (Zell.)							

Scientific names, common names
crops affected

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Epicaerus aurifer</i> Boh.: V19 weevil - alfalfa (pastures), beans	x						
<i>Epicaerus cognatus</i> Sharp.: V19 potato weevil - potato	x						
<i>Epicaerus inaequalis</i> (Champ.): V19 weevil - potato		x		x		x	x
<i>Epicaerus ravidus</i> Boheman = <i>E. aurifer</i> Boh.							
<i>Epicauta bipunctata</i> Werner: V32 two-spotted blister beetle - beans	x						
<i>Epicauta carmelita</i> (Chevr.): V32 blister beetle - squash	x						
<i>Epicauta cinera</i> (Forst.): V32 clematis blister beetle - potato, pepper, corn	x						
<i>Epicauta corvina</i> (LeC.): V32 blister beetle - potato, beans	x						
<i>Epicauta croceicincta</i> (Duges): V 32 blister beetle - beans	x						
<i>Epicauta distincta</i> : V32 blister beetle - potato (this name combi- nation cannot be found in the literature)						x	
<i>Epicauta diversicornis</i> (Haag): V32 blister beetle - potato	x						
<i>Epicauta funesta</i> (Chevr.): V32 blister beetle - pepper	x						
<i>Epicauta lemniscata</i> Fabr.: V32 three-striped blister beetle - beans	x						
<i>Epicauta longicollis</i> (LeC.): V32 blister beetle - potato	x						
<i>Epicauta maculata</i> (Say): V32 spotted blister beetle - potato, beans	x						
<i>Epicauta melanochroa</i> Wellm.: V32 blister beetle - beans, squash	x						
<i>Epicauta nigra</i> Duges = <i>E. melanochroa</i> Wellm.							
<i>Epicauta ocellata</i> (Duges): V32 eyed blister beetle - pepper	x						
<i>Epicauta pardalis</i> (LeC.: V32 blister beetle - potato	x						
<i>Epicauta pestifera</i> Werner: V32 margined blister beetle - sweet potato				x			x
<i>Epicauta rufipedes</i> (Duges): V32 blister beetle - alfalfa	x	x			x		
<i>Epicauta solani</i> Werner = <i>E. pestifera</i> Werner							

Scientific names, common names crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Epicauta subvittata</i> Haag = <i>E. rufipedes</i> (Duges)							
<i>Epicauta vittata</i> Fabr.: V32 striped blister beetle - potato	x						
<i>Epicauta vitticollis</i> Haag: V32 blister beetle - potato, tomato	x			x			
<i>Epicauta vittula</i> Beaur. = <i>E. rufipedes</i> (Duges)							
<i>Epicauta</i> sp.: V32 blister beetle - beans, potato	x		x		x		
<i>Epilachna borealis</i> (Fabr.): V16 squash beetle - citrus, cantaloupe, chayote, cucumbers, squash, watermelon	x	x	x	x	x	x	x
<i>Epilachna cervina</i> Muls = <i>E. varivestis</i> Muls							
<i>Epilachna corrupta</i> Muls = <i>E. varivestis</i> Muls							
<i>Epilachna cuprea</i> Coq. = <i>E. varivestis</i> Muls							
<i>Epilachna defecta</i> Muls: V16 leaf beetle - beans				x			
<i>Epilachna difficilis</i> Muls = <i>E. varivestis</i> Muls							
<i>Epilachna genuina</i> Muls = <i>E. varivestis</i> Muls							
<i>Epilachna juncta</i> Joh. = <i>E. varivestis</i> Muls							
<i>Epilachna maculiventris</i> Bland. = <i>E. varivestis</i> Muls							
<i>Epilachna modesta</i> Muls = <i>E. varivestis</i> Muls							
<i>Epilachna murina</i> Muls = <i>E. varivestis</i> Muls							
<i>Epilachna varipes</i> Muls = <i>E. varivestis</i> Muls							
<i>Epilachna varivestis</i> Muls: V16 Mexican bean beetle - beans	x	x	x	x	x	x	
<i>Epitrix cucumeris</i> (Harris): V13 potato flea beetle - potato, onion, squash, tomato, wheat, pepper	x	x	x		x		x
<i>Epitrix fuscata</i> DuVal: V13 eggplant flea beetle - potato, tomato		x				x	
<i>Epitrix pubescens</i> Illiger = <i>E. cucumeris</i> Harris							
<i>Epitrix subcrinita</i> (LeConte): V13 western potato flea beetle - potato	x				x		
<i>Epitrix</i> sp.: V13 flea beetle - corn, eggplant, beets, potato, rice, tomato	x					x	

Scientific names, common names,
crops affected

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Erinnyis ello (L.): U 46 no common name - casava, papaya	x				x	x	x
Erythrogonia areaolata (Sign.): QQ6 leafhopper - potato	x	x	x	x		x	
Erythrogonia jucunda (Wlk.): QQ6 leafhopper - corn				x			
Estigmene acrea (Drury): U2 salt-marsh caterpillar - squash, chayote, beans, sorghum, cantaloupe, cucumber, watermelon	x	x	x	x	x	x	x
Estigmene albida (Stretch): U2 wooly bear - watermelon			x				
Etiella zinckenella (Treitschke): U36 lima bean pod borer - beans, peas	x	x	x				
Eubulus sp.: V19 Pacific Coast weevil - papaya	x						
Eudamus proteus L. = Urbanus proteus (L.)							
Euglyphis directa Schauss.: U22 moth - avocado	x		x			x	
Eumecosomyia gracilis Coq. = E. nubila Wied.							
Eumecosomyia lacteivittata Hendel: X22 gnat - corn, pastures	x						
Eumecosomyia nubila Wied.: X22 gnat - corn, rice	x	x	x	x	x	x	
Eupelmus popa (Girault): W7 no common name - (attack insects living and eating the inside of sorghum seeds)			x				
Euphoria basalis Burmeister: V41 flower beetle - beans, corn, squash, cantaloupe	x						
Euphoria geminata Chevr.: V14 eggplant beetle - eggplant	x						
Euphoria inda (L.): V41 bumble flower beetle - squash	x						
Euphoria leucographa G & P: V41 beetle - corn	x						
Euphoria limatula (Jans.): V41 beetle - corn					x		
Euphoria nitens Csy.: V41 beetle - pastures	x						
Euphoria pulchella G & P: V41 beetle - potato	x	x			x		

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Euphoria subtomentosa</i> Mannh.: V41 beetle - pastures	x						
<i>Euphoria yucateca</i> Bates: V41 beetle - banana	x		x				
<i>Eurema albula</i> Cramer: U37 no common name - cassia	x	x	x	x	x	x	x
<i>Eurytoma</i> sp.: W13 no common name - parasite, attacks insect pests of grain sorghum			x				
<i>Euschistus bifibulus</i> (P & B): Q15 stinkbug - potato	x	x		x		x	x
<i>Euschistus biformis</i> Stål: Q15 stinkbug - beans, corn, sweet potato, potato	x	x				x	x
<i>Euschistus rugifer</i> Stål: Q15 stinkbug - beans	x						
<i>Euschistus spurculus</i> Stål: Q15 stinkbug - pastures	x	x					
<i>Euschistus zopilotensis</i> Dist.: Q15 stinkbug - cantaloupe	x						
<i>Euschistus</i> sp.: Q15 stinkbug - potato, citrus	x					x	
<i>Eutetranychus banksi</i> (McGregor): XXIV.14 Texas citrus mite - cantaloupe, chayote, cucumber, squash, watermelon					x		
<i>Eutettix tenellus</i> (Baker) = <i>Circulifer</i> <i>tenellus</i> (Baker)							
<i>Eutheola bidentata</i> Burm.: V41 two-toothed chafer - pastures, rice	x		x	x		x	
<i>Eutheola humilis</i> Burm.: V41 corn whorl borer - corn	x						
<i>Eutheola rugiceps</i> (LeC.): V41 rice root chafer - rice	x						x
<i>Euthyrhynchus floridanus</i> (L.): Q15 <i>Euphoria predator</i>	x	x		x	x	x	x
<i>Euxesta major</i> (Van der Wulp): X22 otitid fly - corn		x	x		x		
<i>Euxesta sororcula</i> Wied.: X22 otitid fly - corn			x		x	x	x
<i>Euxesta stigmatias</i> Loew: X22 otitid fly - corn	x	x	x			x	x
<i>Euxesta</i> sp.: X22 otitid fly - corn	x						

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Evergestis rimosalis Guenee: U42 cabbage striped worm - cabbage							X
Exitianus sp.: QQ6 no common name - beans (probably E. exitiosus (Uhler)	X						
Faustinus apicalis (Faust.): V19 weevil - eggplant, tomato					X		
Faustinus rhombifer (Champ.): V19 weevil - tomato					X		
Faustinus ovatipennis (Champ.): V19 weevil - tomato				X			
Faustinus sp.: V19 weevil - cabbage, lettuce					X		
Feltia annexa Treit = Feltia subterranea (Fabr.)							
Feltia malefida Gn. = Agrotis malefida (Gn.)							
Feltia subterranea (Fabr.): U29 granulate cutworm - corn, onion, cabbage, beans, beets, carrots, lettuce, garlic, potato, rice	X	X	X	X	X	X	X
Flatormenis sp.: QQ12 no common name - mango				X			
Frankliniella cephalica Crawf.: P4 thrips - beans					X		
Frankliniella cognita Caldwell: P4 thrips - beans	X						
Frankliniella fortissima Priesner: P4 thrips - beans, pastures	X				X		
Frankliniella minuta (Moulton): P4 thrips - wheat	X						
Frankliniella occidentalis (Pergande): P4 western flower thrips - flowers, beans, onion	X						
Frankliniella tritici (Fitch): P4 flower thrips - tomato	X						
Frankliniella williamsi Hood.: P4 thrips - corn, onion	X			X	X		X
Frankliniella sp.: P4 thrips - banana, corn	X	X	X	X	X	X	X
Gargaphia iridescens Champ.: Q20 no common name - potato, cucumber, watermelon	X						

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Geraeus lentiginosus</i> (Boh.): V19 no common name - potato	x	x				x	
<i>Geraeus quadrisignatus</i> Champion = <i>G.</i> <i>senilis</i> (Gyll.)							
<i>Geraeus senilis</i> (Gyll.): V19 no common name - beans, corn	x	x				x	
<i>Geraeus trivittatus</i> Champ.: V19 no common name - potato	x	x				x	x
<i>Geraeus</i> sp.: V19 no common name	x	x	x	x	x	x	x
<i>Gnathocerus cornutus</i> (Fabr.): V46 broad horned flour beetle - stored grains						x	
<i>Gnorimoschema operculella</i> (Zeller) = <i>Phthorimaea operculella</i> (Zeller)							
<i>Congrocnemis</i> sp.: H9 no common name - banana			x				
<i>Gonodonta bidens</i> (Hbn.): U29 no common name - citrus	x						
<i>Gonodonta pyrgo</i> (Cramer): U29 no common name - citrus	x				x	x	
<i>Gracillaria</i> sp.: U16 leaf miner - avocado (leaf miners seen in Honduras and El Salvador may belong to the same family and genus)	x						
<i>Graminella cognita</i> Caldwell: QQ6 leafhopper - beans	x		x	x		x	x
<i>Graphocephala coccinea</i> (Forst.): QQ6 leafhopper - potato	x	x				x	
<i>Graphocephala induta</i> (Fowl.): QQ6 leafhopper - corn	x	x				x	x
<i>Graphocephala sexlineata</i> (Sign.): QQ6 leafhopper - potato, sweet potato	x	x	x			x	x
<i>Gryllotalpa</i> sp.: H5 no common name - rice, tomato, potato	x					x	
<i>Gynandrobrotica lepida</i> (Say): V13 leaf beetle - beans, pastures	x	x		x	x	x	
<i>Hadromeropsis fulgens</i> Champ.: V19 weevil - corn	x						
<i>Hadromeropsis splendida</i> Champion = <i>H.</i> <i>fulgens</i> Champion							
<i>Haimbachia quiriguella</i> Schauss: U8 no common name - rice					x		
<i>Hansenia pulverulenta</i> (Guerin-Meneville): QQ12 - mango fulgorid - mango	x						

Scientific names, common names crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Halisidota schausi Rothchild: U2 tussock moth - beans	x					x	x
Halticus bracteatus (Say): Q11 garden flea hopper - potato, cotton, tomato, citrus, beans, cantaloupe, cha- yote, cucumber, eggplant, squash, pepper, watermelon	x	x			x	x	
Halticus citri (Ashm.) = Halticus bracteatus (Say)							
Halticus sp.: Q11 flea hopper - onion, tomato	x						
Haplaxius sp.: QQ13 no common name - corn	x						
Haptoncus sp.: V35 no common name - pineapple						x	
Harmostes nebulosus Stal: HEM:Rhopalidae no common name - pastures	x	x					
Heilipus lauri Boh.: V19 avocado seed borer - avocado	x	x				x	
Heilipus near lauri Boh.: V19 no common name - avocado	x						
Heilipus pittieri Barber: V19 weevil - avocado						x	
Heilipus trifasciatus (Fabr.): V19 no common name - avocado					x		
Heliothis virescens F.: U29 tobacco bud worm - tomato						x	
Heliothis zea (Boddie): U29 bollworm, corn earworm, tomato fruitworm- corn, potato, beans, tomato, cotton, tobacco, eggplant, sorghum	x	x	x	x	x	x	x
Heliothrips haemorrhoidalis (Bouche): P4 greenhouse thrips -avocado and others						x	
Hellula phidilealis (Wlk.): U42 moth - cabbage, lettuce			x		x		
Hemiberlesia rapax (Comst.): QQ11 greedy scale - citrus	x						
Hercothrips fasciatus (Perg.) = Calio- thrips fasciatus (Perg.)							
Hercothrips phaseoli (Hood) = Caliothrips phaseoli (Hood)							
Heterotermes convexinotatus (Snyder): K3 termite - corn					x		
Homalodisca coagulata (Say): QQ6 leafhopper - mango	x						

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Homalodisca liturata Ball: QQ6 leafhopper - beans, cantaloupe, water-melon	x						
Homalodisca sp.: QQ6 no common name - corn	x						
Hoplophorion monogramma (Germar): QQ6 avocado coreid - avocado	x	x				x	
Hortensia similis (Walker): QQ6 leafhopper - beans	x	x		x		x	x
Hyalodictyon nodivena (Walker) = Hyalodictyon truncatum (Walker)							
Hyalodictyon truncatum (Walker): QQ13 no common name - beets			x				x
Hylemya antiqua (Meigen): X18 onion maggot - onion	x					x	
Hylemya brassicae (Bouché): X18 cabbage maggot - cabbage						x	
Hylemya cilicrura (Rond.) = H. platura (Meigen)							
Hylemya platura (Mg.): X18 corn maggot - corn garlic	x	x	x	x	x	x	x
Hylemya sp.: X18 no common name - eggplant	x						
Hymenia recurvalis (F.): U42 Hawaiian webworm - beets					x		
Hyperomyzus lactucae (L.): QQ2 aphid - compositae	x						
Hypselonotus concinnus Dallas: Q6 coreid - rice				x			
Hypselonotus fulvus DeG.: Q6 coreid - beans, corn	x	x		x		x	x
Hypselonotus fulvus lineatus Stål: Q6 coreid - pastures	x						
Icerya montserratensis R. & H.: QQ8 Montserrate cottony-cushion scale - citrus	x	x		x	x	x	x
Icerya purchasi Maskell: QQ8 cottony-cushion scale - citrus	x	x	x	x	x	x	
Icerya similis Morrison: QQ8 no common name - citrus			x	x	x	x	x
Idiarthron subquadratum S. & P.: H9 no common name - banana			x				
Iridomyrmex humilis (Mayr): W14 Argentine ant - attacks field workers	x						

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Ischnaspis longirostris</i> (Sign.): QQ8 black thread scale - mango					x		
<i>Japanagromyza iridescens</i> Frost. = <i>J. inaequalis</i> (Mall)							
<i>Japanagromyza inaequalis</i> (Mall.): XI bean leaf miner - beans			x			x	x
<i>Jadera haematoloma</i> Herrich-Schaeffer: Q6 coreid - corn	x						
<i>Julus</i> sp.: Diplopoda black millipede - corn			x				
<i>Keiferia lycopersicella</i> (Busk): U13 no common name - tomato	x				x		
<i>Keonolla lugubris</i> Sign.: QQ6 leafhopper - pastures	x						
<i>Lachnosterna</i> spp. - Phyllophaga is preferred for American species							
<i>Laemophloeus pusillus</i> (S.) = <i>Cryptolestes pusillus</i> (S.)							
<i>Laphygma frugiperda</i> Abb. & Sm. = <i>Spodoptera frugiperda</i> (J.E. Smith)							
<i>Lasioderma serricorne</i> (Fabr.): V1 cigarette beetle - stored grains and tobacco	x				x	x	
<i>Laspeyresia fabivora</i> Meyrick: U33 bean moth - beans (synonym <i>L. leguminis</i> Heinrich)	x		x				x
<i>Laspeyresia leguminis</i> Heinrich = <i>L. fabivora</i> Meyrick							
<i>Laspeyresia nigricana</i> (Stephens): U33 pea moth - beans		x					
<i>Laspeyresia</i> sp.: U33 no common name - beans						x	
<i>Lema nigrovittata</i> Guerin = <i>Lema trilineata</i> Oliv.							
<i>Lema trilineata</i> Oliv.: V13 three-lined potato beetle - tomato	x						
<i>Lepidosaphes beckii</i> (Newm.): QQ8 purple scale - citrus	x	x	x	x	x	x	x
<i>Lepidosaphes gloverii</i> (Packard): QQ8 glover scale - citrus	x				x		
<i>Lepidosaphes</i> sp.: QQ8 scale - citrus							x
<i>Leptinotarsa decemlineata</i> Kroatz = <i>L. undecemlineata</i> Stål							

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Leptinotarsa decemlineata</i> (Say): V13 Colorado potato beetle - potato	x	x					
<i>Leptinotarsa undecimlineata</i> Stål: V13 potato leaf beetle - potato	x	x		x	x	x	
<i>Leptinotarsa</i> sp.: V13 eggplant leaf beetle - eggplant	x						
<i>Leptoglossus oppositus</i> (Say): Q6 leaf-footed coreid - corn, cassava, squash	x						
<i>Leptoglossus phyllopus</i> (L.): Q6 leaf-footed bug - onion, corn, potato, tomato	x						x
<i>Leptoglossus zonatus</i> (Dall.): Q6 belted leaf-footed bug - tomato, potato, banana, eggplant, citrus	x				x	x	
<i>Leptoglossus</i> sp.: Q6 leaf footed coreid - papaya, potato, squash	x	x			x		
<i>Leptophobia aripa</i> (Boisduval): U37 cabbage butterfly - cabbage, lettuce	x	x	x	x	x	x	x
<i>Leptophobia</i> sp.: U37 no common name - cabbage	x						
<i>Lepturges</i> sp. borer - mango	x						
<i>Leucaspis cockerelli</i> (de Charmay) = <i>Lopholeucaspis cockerelli</i> (De Charmay)							
<i>Leucothrips</i> sp.: P4 no common name - beans					x		
<i>Ligyrocoris nitidula</i> (Uhler) = <i>Pseudopamera nitidula</i> (Uhler)							
<i>Ligyus nasutus</i> Burmeister: V41 coffee chafer - rice, lettuce			x				
<i>Linoedes</i> sp.: U42 no common name - eggplant					x		
<i>Liothrips illex</i> (Moulton): P3 no common name - avocado (Probably another species. This species is only found on <i>Photinia arbustifolia</i> Lindl. [Christmas Berry])	x	x			x		x
<i>Liriomyza commelinae</i> (Frost): X1 bean leaf miner - beans, tomato						x	x
<i>Liriomyza langei</i> Frick: X1 Lang's leaf miner - beans	x						

Scientific names, common names,
crops affected

Liriomyza munda Frick: X1
pepper leaf miner - pepper, tomato,
potato

Liriomyza pictella (Thomson): X1
melon leaf miner - cantaloupe, beans,
squash, watermelon

Liriomyza pusilla Mg.: X1
tomato leaf miner - tomato, beans
(probably is another species, this is
European)

Liriomyza sp.: X1
leaf miner - beans, cantaloupe, chayote,
cucumber, eggplant, garlic, squash,
tomato, watermelon

Lissorhoptrus oryzophilus Kuschel: V19
rice water weevil - rice

Lissorhoptrus simplex (Say): V19
simple rice weevil - rice

Lissorhoptrus sp.: V19

Lonchea chalybea Wied., DIP: Lonchaeidae
rapid fly - cassava

Lophocateres pusilla (Klug): V37
weevil - stored grains

Lopholeucaspis cockerelli (de Charmay): QQ8
Cockerell's soft scale - citrus

Loxostege similalis (Guen.): U42
garden webworm -

Lucidota nigricans Say: V26
black elaterid - cabbage

Lygaeus poeyi Guerin = Ochrostomus poeyi
(Guerin)

Lygus sp.: Q11
no common name - potato

Lytta ebenina (Duges): V32
blister beetle - beans

Lytta eucera (Chevr.): V32
squash blister beetle - squash

Lytta quadrimaculata (Chevr.): V32
four spotted blister beetle - potato

Macrobasis distincta = Epicauta distincta

Macroductylus angustatus Latr. = M.
fulvescens Bates

Macroductylus fulvescens Bates: V41
chafer - citrus

MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
x						
x						
x					x	x
x		x		x		
					x	
x				x		
x						
x						
				x	x	
				x		
x						
x						
x						
x						
x						
x						
x						
x						
x						

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Macroductylus infuscatus Bates: V41 chafer - corn, beans	x						
Macroductylus lineatus Chevr.: V41 chafer - beans	x						
Macroductylus mexicanus Burm.: V41 chafer - alfalfa, pastures, apple, corn, beans	x						
Macroductylus nigripes Bates: V41 chafer - corn, apple	x						
Macroductylus suavis Bates: V41 chafer - citrus					x	x	x
Macroductylus subspinosus (Fab.): V41 rose chafer - citrus, corn	x						
Macroductylus sylphis Bates: V41 chafer - citrus					x	x	x
Macroductylus virens Bates: V41 head chafer - corn	x						
Macroductylus spp.: V41 chafer - sorghum, avocado, wheat	x					x	
Macrosiphum avenae (F.): QQ2 English grain aphid - oats, etc.	x	x					
Macrosiphum euphorbiae (Thos.): QQ2 potato aphid - potato and other solanaceous plants	x					x	x
Macrosiphum gei (Kalt.) = M. euphorbiae (Thos.)							
Macrosiphum granarium (Kby.) = Macrosiphum avenae (F.)							
Macrosiphum pisum (Harris) = Acyrthosiphon pisum (Harris)							
Macrosiphum solanifolii (Ashm.) = Macrosiphum euphorbiae (Thos.)							
Macrosteles sp.: QQ6 no common name - corn	x						
Mamestra brassicae = European species							
Manduca celeus = Manduca quinquemaculata (Haw.)							
Manduca quinquemaculata (Haw.): U46 tomato hornworm - potato, tomato	x					x	x
Manduca sexta (Johansen): U46 tobacco hornworm - potato, tomato, to- bacco and other solanaceous plants	x	x	x	x	x	x	x
Manduca spp.: U46 hornworm - tomato, potato	x						

Scientific names, common names
crops affected

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Mechanitis sp. coffee butterfly - eggplant			x				
Mecidea minor Ruches: Q15 stinkbug - spinach, corn	x						
Melanagromyza virens (Loew): X1 bean leaf miner - beans							x
Melanagromyza sp.: X1 no common name - tomato			x				
Melanaspis aliena (Newst.): QQ8 avocado soft scale -avocado	x						
Melanoplus littoralis Roberts: H1 coastal grasshopper - general feeder	x						
Melanoplus spp.: H1 no common name - corn, sweet potato, sorghum, beans	x						
Melanotus cribulosus: V22 Guatemala wireworm - corn (This species known only from the U.S. This species may be cribricollis Candeze or a new species.)		x					
Melanotus fissilis (F.): V22 wireworm - corn		x					
Melanotus sp.: V22 no common name - corn		x					
Melipotis indomita (Wlk.): U29 moth - corn, beans	x	x					
Melittia cucurbitae (Harris): U1 squash vine borer - cantaloupe, chayote, cucumber, squash, watermelon	x				x	x	
Melittia satyriniformis Hbn.: U1 Mexican squash vine borer - squash	x						
Melittia sp.: U1 no common name - cucumber, watermelon	x						
Meloe sp.: V32 blister beetle - beans	x						
Membracis mexicana (Guer.): QQ6 Mexican melon leafhopper - cantaloupe	x						
Metamasius callizona (Chevr.): V19 weevil - pineapple	x						
Metamasius hemipterus sericeus (Oliv.): V19 silky cane weevil - banana, plantain	x	x	x	x	x	x	x
Metascarta coeruleovittata (Signoret): QQ6 leafhopper - corn				x			
Metcalfiella monogramma (Germar) = Hoplophorion monogramma (Germar)							

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Metritona bicolor</i> Fabr.: V13 golden tortoise beetle - sweet potato	x						
<i>Micromyzus formosanus</i> (Takah.): QQ2 aphid - onion, garlic	x	x	x	x	x	x	x
<i>Microrhopala rubrolineata</i> (Mann.): V13 leaf beetle - squash	x						
<i>Miselia</i> sp.: U29 cabbage worm - cabbage, beans	x						
<i>Mitilaspis citricola</i> = <i>Lepidosaphes beekii</i> (Newman)							
<i>Mocis latipes</i> (Guen.): U29 moth - corn, pastures, rice, sorghum	x	x	x	x	x	x	x
<i>Mocis repanda</i> Fabr. of Mexico & Central America = <i>M. latipes</i> (Guén.)							
<i>Monancia monotropidia</i> Stål = <i>Dictyla</i> <i>monotropidia</i> (Stål)							
<i>Monolepta</i> sp.: V13 leaf beetle - beans, corn			x	x			
<i>Monomacra frontalis</i> (Jac.): V13 leaf beetle - beans		x	x			x	
<i>Mormidea angustata</i> Stål: Q15 narrow stinkbug - rice	x						
<i>Normidea cubrosa</i> (Dallas): Q15 stinkbug - cantaloupe	x						
<i>Mormidea pictiventris</i> Stål: Q15 stinkbug - rice	x	x		x	x	x	x
<i>Mormidea sordidula</i> (Stål): Q15 sordid stinkbug - cantaloupe	x						
<i>Mormidea ypsilon</i> (L.): Q15 Greek stinkbug - corn	x	x		x			x
<i>Mormidae</i> spp.: Q15 no common name - rice	x						
<i>Mozena lunata</i> Burm.: Q16 ambush bug - beans	x						
<i>Murgantia histrionica</i> (Hahn.): Q15 harlequin bug - corn, cabbage, potato squash	x	x		x		x	
<i>Murgantia munda</i> Stål = <i>Murgantia varicolor</i> (Westwood)							
<i>Murgantia varicolor</i> (Westwood): Q15 ambush bug - citrus	x						
<i>Mycetaspis personata</i> (Comstock): QQ8 mango leaf scale - avocado, mango	x				x		

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Myelois venipars</i> Dyar = <i>Paramyelois transi-</i> <i>tella</i> (Walk)							
<i>Myochrous coenus</i> Blake: V13 leaf beetle - corn	x						
<i>Myochrous</i> sp.: V13 leaf beetle - corn	x					x	x
<i>Myzus lycopersici</i> (Clarke): QQ2 aphid - tomato	x						
<i>Myzus persicae</i> (Sulzer): QQ2 green peach aphid - black pepper, potato, broccoli, cabbage, onion, cantaloupe, cucumber, tomato, watermelon (transmits more viruses than any other insect known)	x	x	x	x	x	x	x
<i>Mysus</i> sp.: QQ2 no common name - eggplant, lettuce	x						
<i>Nabis capsiformis</i> Germ.: Q12 no common name (predator) - beneficial	x	x	x	x	x	x	x
<i>Narnia inornata</i> Dist.: Q6 unadorned chinch bug - beans	x						
<i>Neobrotica hondurensis</i> Jac.: V13 Honduran leaf beetle - corn			x				
<i>Neoconocephalus a. affinis</i> (P de B.): H9 no common name - corn	x						
<i>Neokolla ignobilis</i> (Fowl.) = <i>Oragua</i> <i>ignobilis</i> (Fowl.)							
<i>Neoleucinodes elegantalis</i> (Guenée): U42 eggplant moth - eggplant			x				
<i>Neotephritis finalis</i> (Loew): X35 composit flower fly (Found on species of Compositae, potato. Probably not a pest on potatoes but of some weed in the potato field.)	x						
<i>Neotetranychus</i> sp.: XXIV.14 no common name - beans					x		
<i>Nephelodes emmedonia</i> (Cramer): U29 bronze cutworm - corn				x			
<i>Nezara marginata</i> (Palis.) = <i>Acrosternum</i> <i>marginatum</i> (Palis.)							
<i>Nezara smaragdula</i> (Fab.) = <i>N. viridula</i> (L.)							
<i>Nezara viridula</i> (L.): Q15 southern green stinkbug - potato, cabbage rice, cotton, corn, beans, eggplant, tomato	x	x	x	x	x	x	x

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Nicentrites testaceipes (Champ.): V19 small corn weevil - corn	x	x			x		
Nicentrus testaceipes (Champ.) = Nicentrites testaceipes (Champ.)							
Niesthrea sp.: HEM:Rhopalidae no common name - beans	x						
Nodonota irazuensis Jac.: V13 Irazu leaf beetle - potato						x	
Nodonota lateralis Jac.: V13 lateral leaf beetle - potato	x	x				x	
Nodonota sp.: V13	x	x		x	x	x	x
Nysius ericae (Schilling): Q10 false chinch bug - potato, wheat, corn	x						
Nysius sp.: Q10 no common name - sorghum, tomato	x						
Ochrostomus pallescens (Stål): Q10 pale false chinch bug - corn	x						
Ochrostomus poeyi (Guerin): Q19 chinch bug - bananas				x			
Ochrostomus pulchellus (Fabr.): Q10 beautiful false chinch bug - corn	x						x
Oebalus insularis (Stål): Q15 island stinkbug - rice	x	x	x	x	x	x	x
Oebalus mexicanus (Sailer): Q15 Mexican stinkbug - sorghum	x						
Oebalus pugnax (Fabr.): Q15 rice stinkbug - sorghum	x						x
Oedancala bimaculata (Dist.): Q10 two-spotted false stinkbug - beans, corn	x	x		x			x
Oecleus infuscatus Caldwell: QQ13 infuscated fulgorid - pepper, tomato	x						
Oecleus pellucens Fowl: QQ13 no common name - pastures	x	x	x				
Oecleus sp.: QQ13 no common name - corn, pastures, wheat	x						
Oediopalpa guerini Baly: V13 Guerin's leaf beetle - rice						x	x
Oiketicus sp.: U39 citrus bagworm - citrus	x						
Oliarus acicus Caldwell: QQ13 no common name - potato	x						
Oliarus sp: QQ13 no common name - corn, pastures	x						
Ollarianus strictus (Ball): QQ6 leafhopper - beans	x						

Scientific names, common names,
crops affected

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Ollarianus sp: QQ6 no common name - beans	x						
Oligonychus indicus (Hirst): XXIV.14 Indian mite - corn (This species only known from India. The species known in Mexico by this name is O. mexicanus (McGregor and Ortega)							
Oligonychus mexicanus (McG. & Ortega): XXIV.14 - Mexican mite - corn	x						x
Oligonychus stickneyi (McGregor): XXIV.14 red mite - corn	x						
Oligonychus yothersi (McGr.): XXIV.14 avocado red mite - avocado	x						
Oligonychus zaea (McGregor): XXIV.14 corn red mite - banana					x		
Oligonychus spp.: XXIV.14 no common name - papaya, corn, sorghum	x		x				
Omophoita aequinoctialis L.: V13 leaf beetle - beans, onion	x	x	x	x	x	x	x
Omophoita albfasciata Jac.: V13 leaf beetle - potato						x	x
Omophoita fulgida Oliver = O. aequinoctialis L.							
Omophoita quadriguttata Fabr. = O. aequinoctialis L.							
Omophoita octomaculata Cr. = O. aequinoctialis L.							
Omophoita simulans Jac.: V13 leaf beetle - beans	x			x			
Omophoita sp.: V13 leaf beetle - beans	x	x	x	x	x	x	x
Oncometopia spp.: QQ6 leafhopper - beans, corn	x	x	x	x	x	x	x
Opistheuria latipennis Stål = Prepops latipennis (Stål)							
Opsiphanes tamarindi Sikyon Fruhs.: LEP Brassolidae - no common name - banana					x		
Opsiphanes tamarindi corrosus Stichel: LEP:Brassolidae - no common name - banana						x	
Oragua ignobilis (Fowl.): QQ6 leafhopper - corn	x						
Orictmetopia fossulatella Ragonot: U36 green bean borer - beans		x	x			x	x

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Ormenis pulverulenta (Guérin-Ménéville) = Hansenia pulverulenta (Guérin-Ménéville)							
Orthezia insignis Browne: QQ8 greenhouse orthesia - pepper	x						
Orthoea bilobata (Say) = Pachybrachius bilobatus (Say)							
Oryzaephilus mercator (Fauvel): V18 merchant grain beetle - stored grains					x	x	
Oryzaephilus surinamensis (L.): V18 saw-toothed grain beetle - stored grain	x		x		x	x	
Oxygona acutangula Chev.: V13 angulated leaf beetle - beans	x	x	x	x	x	x	x
Oxygona melanocera Erichson = O. acutangula Chev.							
Oxygryllus pimalis Casey = O. ruginasus (LeC.)							
Oxygryllus ruginasus (LeC.): V41 melon chafer - cantaloupe, watermelon	x						
Pachybrachius bilobatus (Say): Q10 bilobed false chinch bug - potato	x	x			x	x	x
Pachyzancla bipunctalis (Fabr.) = Psara bipunctalis (Fabr.)							
Pachyzancla periusalis (Wlk.) = Pilemia periusalis (Wlk.)							
Pachyzancla phaeopteralis (Guen.) = Psara phaeopteralis (Guen.)							
Pantomorus femoratus Sharp.: V19 weevil - corn			x				
Papilio alopis Godm. & Salv.: U34 citrus-dog - citrus	x						
Papilio anchisiades capys: U34 tomato-dog - citrus							x
Papilio anchisiades idaeus Fabr.: U34 tomato-dog - citrus	x	x	x	x	x	x	x
Papilio cresphontes Cramer: U34 orange-dog - citrus	x	x	x	x	x	x	
Papilio pharnaces Doubl.: U34 zapote-dog - zapote blanco	x						
Papilio thoas autocles Rothch.: U34 orange-dog - citrus	x	x	x	x	x	x	
Papilio sp.: U34 no common name - avocado, lettuce	x	x					x
Parachirida guttata fuliginosa (Oliv.): V13 leaf beetle - beans, corn	x	x			x		

Scientific names, common names,
crops affected

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Parachirida immunita Boheman = P. guttata fuliginosa (Oliv.)							
Parachirida trabeata Boheman = P. guttata fuliginosa (Oliv.)							
Paramyelois transitella (Wlk.): U36 navel-orange worm - citrus	x						
Paratetranychus yothersi McGregor = Oligonychus yothersi (McGregor)							
Paratetranychus stickneyi McG. = Oligonychus stickneyi (McG.)							
Paratetranychus spp. = Oligonychus spp							
Paratrioza cockerelli Sulg.: QQ19 potato and tomato psyllid - potato	x						
Parlatoria pergandii Comstock: QQ11 "ballejo" scale - citrus					x		
Paromius longulus (Dallas): Q10 large false chinch bug - corn, pastures	x	x			x		x
Pelidnota virescens Burm.: V41 no common name - corn			x				
Pentilia spp.: V16 no common name - citrus				x			
Peridroma margaritosa = P. saucia (Hübner.)							
Peridroma saucia (Hübner.): U29 variegated cutworm - potato, pepper	x	x	x	x	x	x	x
Petrobis latens (Müller): XXIV.14 brown wheat mite - wheat	x						
Phaonia sp.: X18 no common name - cassava (Probably a predator)					x		
Phegoneus sp. no common name - pineapple						x	
Phenacoccus gossypii Tow. & C.: QQ18 Mexican mealybug - potato	x						
Phera centrolineata (Sign.): QQ6 striped leafhopper - corn	x	x					
Phera obtusifrons Fowler: QQ6 wide fronted leafhopper - corn	x	x	x	x		x	
Phlegothontius sexta (Johansen) = Manduca sexta (Johansen)							
Phoebis sennae eubule (L.) eggplant worm - eggplant	x						
Photinomorpha simulans Champion: V10 potato wireworm - potato	x						

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Phthia picta</i> (Drury): Q6 coreid bug - corn, potato, rice, sweet potato, eggplant, tomato	x	x	x	x	x	x	x
<i>Phthorimaea operculella</i> (Zeller): U13 potato tuber worm - potato, sweet potato	x	x	x	x		x	
<i>Phyllocoptruta oleivora</i> (Ashmead): XXIV.6 citrus rust mite - citrus	x	x				x	
<i>Phyllophaga dentex</i> Bates: V41 white grub - potato	x						
<i>Phyllophaga menetriesi</i> Blanch.: V41 white grub - potato, cabbage, beet, carrot, lettuce						x	
<i>Phyllophaga sanjosicola</i> Sayle: V41 white grub - potato, cabbage, beet, carrot, lettuce jobotos			x			x x	
<i>Phyllophaga vicina</i> Moser: V41 jobotos, white grub - potato, cabbage, beet, carrot, lettuce						x	
<i>Phyllophaga</i> spp.: V41 joboto, white grub - potato, beans, corn, lettuce, onion, rice, sorghum, tomato, wheat, sweet potato, pepper	x	x	x		x		x
<i>Phyllotreta fallacia</i> Csiki: V13 flea beetle - beans				x			
<i>Phyllotreta vittata</i> F.: V13 striped flea beetle - cabbage							x
<i>Phyrdenus bullatus</i> Casey = <i>P. muriceus</i> Germar							
<i>Phyrdenus divergens</i> Germar: V19 weevil - potato					x	x	
<i>Phyrdenus muriceus</i> Germar: V19 tomato stem borer - potato, tomato, pepper	x	x		x	x	x	
<i>Physonota alutacca</i> Boh.: V13 leaf beetle - beans	x	x		x	x	x	x
<i>Piazurus centrali-americanus</i> (Heller) = <i>Pseudopiazurus centrali-americanus</i> (Heller)							
<i>Pieris brassicae</i> (L.): U37 white cabbage butterfly - pepper	x						
<i>Pieris elodia</i> Boisduval = <i>Leptophobia</i> <i>elodia</i> (Boisduval) and Color form of <i>Leptophobia aripa</i> (Boisduval)							

Scientific names, common names,
crops affected

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Pieris monuste</i> (L.) = <i>Ascia monuste</i> (L.)							
<i>Pieris oleracea</i> Harr.: U37 cabbage butterfly - cabbage	x	x					
<i>Pieris protodice</i> Boisduval & Lec.: U37 southern cabbageworm - cabbage	x	x					
<i>Pieris rapae</i> (L.): U37 imported cabbageworm - cabbage (This species does not range south of Northern Mexico. These records may have been from misidentified specimens.)	x	x					x
<i>Piezodorus guildinii</i> (Westw.): Q15 stinkbug - rice	x	x					
<i>Pilemia periusalis</i> (Wlk.): U42 moth - onion, eggplant, tomato							x
<i>Pitedia ligata</i> (Say): Q15 stinkbug - beans, corn, pea, black pepper tomato, cassava	x						
<i>Plagiometriona clavata</i> (Fabr.): V13 leafbeetle - beans, potato	x						
<i>Planococcus citri</i> (Risso): QQ8 citrus mealybug - citrus, coffee, mango, cantaloupe, papaya	x	x	x	x		x	x
<i>Platytyelus latipennis</i> (Stål) = <i>Prepops</i> <i>latipennis</i> (Stål)							
<i>Plesiothrips ayarsi</i> Stannard: P4 thrips - onion	x						
<i>Plodia interpunctella</i> (Hbn.): U36 Indian-meal moth - stored grains	x		x	x	x	x	
<i>Plusia</i> sp.: U 29 no common name - lettuce	x						
<i>Plutella maculipennis</i> (Curtis): U20 diamondback moth - beet (cruciate), cabbage	x		x	x		x	x
<i>Podischnus agenor</i> Ol.: V41 rhinoceros beetle - corn, sugarcane			x				
<i>Polygrammodes elevata</i> (Fabr.): U42 sweet potato moth - sweet potato	x						
<i>Polygrammodes histrionica</i> : U42 lesser sweet potato moth - sweet potato	x						
<i>Premmotrypes</i> sp.: V19 no common name - potato							x
<i>Prepops latipennis</i> (Stål): Q11 bean plant bug - beans, rice				x		x	
<i>Pridebua erudabua</i> (error in spelling) = <i>Prodenia eridania</i> (Cramer)							

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Prodenia androgea</i> (Cram.): U29 Nicaraguan armyworm					X		
<i>Prodenia dolichos</i> (Fab.): U29 El Salvador armyworm - potato	X		X		X	X	
<i>Prodenia eridania</i> (Cramer): U29 southern armyworm - corn, watermelon, string beans, lettuce, onion, tomato	X	X	X		X	X	X
<i>Prodenia latifascia</i> Wlk.: U29 lateral lined armyworm - corn, watermelon, broad beans, lettuce, tomato	X	X	X	X	X	X	
<i>Prodenia ornithogalli</i> Guénée: U29 yellow-striped armyworm - corn		X			X		
<i>Prodenia sunia</i> (Guénée): U29 Costa Rican armyworm - sorghum, peas						X	
<i>Prodenia</i> spp.: U29 armyworm - beans, beet, cabbage, cantaloupe, carrot, chayote, cucumber, lettuce, onion, rice, squash, sorghum, tomato, watermelon		X	X	X	X	X	
<i>Prorachia daria</i> (Druce): U29 moth - corn, sorghum	X						
<i>Prosapia bicincta</i> Fenn.: QQ4 pasture spittlebug - pastures, rice	X	X				X	
<i>Prosapia biformis</i> Lall. = <i>Prosapia plagiata</i> (Dist.)							
<i>Prosapia plagiata</i> (Dist.): QQ4 grass spittlebug - pastures						X	
<i>Prosapia simulans</i> (Walk.): QQ4 spittlebug - grass, pastures, corn	X	X		X		X	X
<i>Prosapia</i> spp.: QQ4 spittlebug - grass, pastures	X	X		X		X	
<i>Prostephanus truncatus</i> (Horn): V5 no common name - stored corn, stored grains in general	X	X	X	X	X	X	X
<i>Protoparce celeus</i> (Hbn.) = <i>Manduca celeus</i> (Hbn.) = <i>Manduca quinquemaculata</i> (Haw.)							
<i>Protoparce sexta</i> (Johansen) = <i>Manduca sexta</i> (Johansen)							
<i>Protoparce quinquemaculata</i> (Haw.) = <i>Manduca quinquemaculata</i> (Haw.)							
<i>Protoparce</i> = <i>Manduca</i>							
<i>Psara bipunctalis</i> (Fabr.): U42 San Salvador garden worm - beets and many other crops			X				

Scientific names, common names,
crops affected

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Psara phaeopteralis</i> (Guen.): U42 grass worm - pastures						X	
<i>Pseudacysta perseae</i> (Heid.): Q20 avocado lace bug - avocado	X						
<i>Pseudaletia unipuncta</i> (Haw.): U29 armyworm - corn, wheat, pastures, rice	X	X	X	X	X	X	X
<i>Pseudischnaspis bowreyi</i> (Cockerell): QQ8 no common name - citrus, avocado					X		
<i>Pseudischnaspis longissima</i> (Cockerell): QQ8 no common name - avocado, citrus					X		
<i>Pseudococcus adonidum</i> (L.) = <i>P. longispinus</i> (Targ.)							
<i>Pseudococcus boninsis</i> (Kuwana): QQ8 no common name - rice							X
<i>Pseudococcus brevipes</i> (Ckll.) = <i>Dysmicoccus brevipes</i> (Ckll.)							
<i>Pseudococcus citri</i> (Risso) = <i>Planococcus citri</i> (Risso)							
<i>Pseudococcus longispinus</i> (Targ.): QQ8 long-tailed mealybug - pepper, citrus	X						
<i>Pseudococcus</i> sp.: QQ8 mealybug - potato, avocado, citrus	X	X	X	X	X	X	X
<i>Pseudopamera nitidula</i> (Uhler): Q10 bright false chinch bug - lettuce	X						
<i>Pseudopiazurus centrali-americanus</i> (Heller): V19 - Gulf Coast weevil - papaya, corn	X		X				
<i>Pseudoplusia includens</i> (Wlk.): U29 moth - corn					X		
<i>Psylliodes punctulatus</i> Melsh.: V13 hops flea beetle - squash	X						
<i>Pteroaphis</i> sp - name unknown							
<i>Pulvinaria urbicola</i> (Ckll.): QQ8 no common name - pepper					X		
<i>Pyrophorus pellucens</i> Esch.: V22 wireworm - corn	X	X					
<i>Pyrota decorata</i> (Haag) decorated blister beetle - beans, potato	X	X	X		X	X	X
<i>Pyrota divirgata</i> (V. & P.): V32 blister beetle - tomato	X						
<i>Pyrota nobilis</i> (Haag): V32 blister beetle - beans	X						
<i>Pyrota quadrinervata</i> (Herr & Mend.): V32. blister beetle - beans	X						

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Pyrota rugulipennis</i> Champion: V32 blister beetle - beans	x						
<i>Pyrrhopyge chalybea</i> (Scud.): U19 confetti worm - avocado (in particular subspecies <i>chloris</i>)	x	x		x			
<i>Rachiplusia ou</i> (Guénée): U29 no common name - beans	x	x				x	
<i>Remigia repanda</i> (Fabr.) = <i>Mocis latipes</i> (Guénée)							
<i>Rhizopertha dominica</i> Fabr.: V5 grain beetle - stored grains	x		x	x	x	x	
<i>Rhizopertha exiguus</i> Walker = <i>R. dominica</i> Fabr.							
<i>Rhizopertha fissicornis</i> Marsh = <i>R. dominica</i> Fabr.							
<i>Rhizopertha frumentaria</i> Nordl. = <i>R. dominica</i> Fabr.							
<i>Rhizopertha moderata</i> Walk. = <i>R. dominica</i> Fabr.							
<i>Rhizopertha picea</i> Marsh. = <i>R. dominica</i> Fabr.							
<i>Rhizopertha pusilla</i> Fabr. = <i>R. dominica</i> Fabr.							
<i>Rhizopertha rufa</i> Hope = <i>R. dominica</i> Fabr.							
<i>Rhodobaenus cribrarius</i> Fabr. = <i>R. tredecim-</i> <i>punctatus femoralis</i> Chevr.							
<i>Rhodobaenus leptocerus</i> Panzer = <i>R.</i> <i>tredecim-punctatus femoralis</i> Chevr.							
<i>Rhodobaenus maculatus</i> Sturm. = <i>R. tredecim-</i> <i>punctatus femoralis</i> Chevr.							
<i>Rhodobaenus obscurus</i> Voet = <i>R. tredecim-</i> <i>punctatus femoralis</i> Chevr.							
<i>Rhodobaenus quatordecimpunctatus</i> Panzer = <i>R. tredecimpunctatus femoralis</i> Chevr.							
<i>Rhodobaenus tredecim-punctatus femoralis</i> Chevr.: V19 - Mexican darnel-grass weevil- corn, pastures	x						
<i>Rhodobaenus tredecim-punctatus venustus</i> Champ. = <i>R. tredecim-punctatus femoralis</i> Chevr.							
<i>Rhodobaenus variabilis</i> Gyll = <i>R. tredecim-</i> <i>punctatus femoralis</i> Chevr.							
<i>Rhopalosiphum maidis</i> (Fitch): QQ2 corn leaf aphid - corn, sugarcane, rice (gramminae in general), sorghum Synonym: <i>Aphis maidis</i> (Fitch)	x	x	x	x	x		x

Scientific names, common names,
affected crops

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Rhopalosiphum rufiabdominalis</i> (Sasaki): QQ2 red-bellied aphid - gramminae	x						
<i>Rhopalosiphum</i> sp.: QQ2 no common name - corn			x				
<i>Rhynchites mexicana</i> Gyll.: beans	x						
Mexican curculio - beans	x						
<i>Rhynchophorus palmarum</i> (L.): V19 coconut weevil - papaya, coconut, pine- apple	x	x	x		x		
<i>Ryssomatus</i> sp.: V19 no common name - sweet potato						x	
<i>Rupella albinella</i> (Cram.): U41 rice-stem borer	x	x	x	x	x	x	x
<i>Sagotylus confluentus</i> (Say): Q6 coreid bug - corn, pastures, rice	x			x			
<i>Saissetia coffeae</i> (Walker): QQ8 hemispherical scale - avocado, coffee, citrus	x	x	x	x	x	x	x
<i>Saissetia hemispherica</i> (Targ.) = <i>Saissetia</i> <i>coffeae</i> (Walker)							
<i>Saissetia nigra</i> (Nietner): QQ8 dark mango scale - citrus, mango			x		x		
<i>Saissetia oleae</i> (Bernard): QQ8. black scale - citrus		x	x				
<i>Schistocerca americana</i> (Drury): H1 American grasshopper - general feeder	x	x	x	x	x	x	x
<i>Schistocerca cancellata</i> (Serv.): H1 cancelled grasshopper - beans, corn (The species <i>cancellata</i> and <i>paranensis</i> are being studied in London.)			x	x			
<i>Schistocerca paranensis</i> Burm.: H1 Argentine grasshopper - general feeder (See note under <i>cancellata</i> .)	x	x			x		
<i>Schistocerca</i> sp.: H1 grasshopper - banana, corn	x			x			
<i>Schizaphis graminum</i> (Rond.): QQ2 greenbug - grass, wheat	x						
<i>Schirtothrips citri</i> (Moulton): P4 citrus thrips - citrus		x					
<i>Selenaspidus articulatus</i> (Morg.): QQ8 articulated soft scale - citrus, avocado	x						
<i>Sesia</i> sp. = <i>Aellopes</i> sp.							
<i>Sibovia occatoria</i> (Say) HOM: Cicadellidae leafhopper - avocado, citrus	x	x	x	x	x	x	x

Scientific names, common names crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Silba pendula</i> (Bezzi) DIP: Lonchaeidae cassava fly - cassava					x	x	
<i>Silba</i> sp. DIPT: Lonchaeidae fruit fly - avocado, citrus, cassava (may be <i>S. pendula</i> (Bezzi) or <i>S.</i> <i>glaberrima</i> (Wd.)				x		x	
<i>Sinea confusa</i> Caud.: Q18 no common name - predator	x						
<i>Sinea</i> sp.: Q18 no common name - predator	x						
<i>Sipha flava</i> (Forbes): QQ2 yellow sugarcane aphid - pastures	x	x	x	x	x	x	x
<i>Sipha</i> sp.: QQ2 no common name - corn	x						
<i>Sitophilus granarius</i> (L.): V19 granary weevil	x	x	x	x	x	x	x
<i>Sitophilus oryzae</i> (L.): V19 rice weevil - stored grains	x	x	x	x	x	x	x
<i>Sitotroga cerealella</i> (Oliv.): U13 Angoumois grain moth - stored grains	x	x	x	x	x	x	x
<i>Sogata cubana</i> (Crawford): QQ10 echinochloa delphacid - rice	x						
<i>Sogata mexicana</i> (Crawford): QQ10 Mexican delphacid - beans	x						
<i>Sogata oryzicola</i> Muir: QQ10 rice delphacid - rice	x		x	x	x	x	x
<i>Solenopsis cephalotes</i> (L.) = <i>Atta</i> <i>cephalotes</i> (L.) - The species <i>Solenopsis</i> <i>cephalotes</i> F. Smith is the same as <i>Solenopsis geminata rufa</i> (Jerdon)							
<i>Solenopsis geminata</i> (F.): W14 fire ant - citrus						x	
<i>Solenopsis</i> spp.: W14 red fire ant - corn	x						x
<i>Solubea insularis</i> Stål = <i>oebalus</i> <i>insularis</i> (Stål)							
<i>Solubea pugnax</i> (F.) = <i>Oebalus pugnax</i> (Fabr.)							
<i>Spartocera fusca</i> (Thunberg): Q6 no common name - potato				x			
<i>Spermophagus pectoralis</i> (Sharp) = <i>Zabrotes subfasciatus</i> (Boh.)							
<i>Sphenarium</i> spp. ORTH grasshopper - corn, pepper, sorghum	x						

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Symphylus deplanatus</i> (H-S): Q15 no common name - corn	x	x		x			x
<i>Synoecca surinama</i> (L.): W29 Surinam wasp - banana, mango				x			
<i>Systema blanda</i> Melsh.: V13 pale-striped flea beetle - tomato	x						
<i>Systema s-littera</i> L.: V13 flea beetle - potato, beans, pasture	x	x		x	x	x	x
<i>Systema sinuatovittata</i> Clark = S. s-littera L.							
<i>Systema</i> sp.: V13 flea beetle - beans, tomato	x		x			x	
<i>Taeniopoda varipennis</i> Rehn: H1 grasshopper - cassava				x			
<i>Talurus rugosus</i> (Jac.): V13 leaf beetle - corn					x		
<i>Tapinaspis wesmaeli diana</i> (Boh.): V13 leaf beetle - corn	x	x					
<i>Tapinaspis puerilis</i> Boh. = <i>T. wesmaeli</i> diana (Boh.)							
<i>Tatua tatua</i> (Cuvier): W29 wasp - mango					x		
<i>Tenebrio molitor</i> L.: V46 yellow mealworm - stored grain			x			x	
<i>Tenebriodes mauritanicus</i> (L.): V37 cadelle - stored grain				x	x	x	
<i>Tetanops vittifrons</i> Van der Wulp: X22 no common name - corn (I doubt that this fly attacks corn. It may be a secondary inhabitant in rotten plant tissue of fungal lesions.)	x						
<i>Tetraleurodes acaciae</i> (Q.): QQ1 acacia whitefly - beans	x						
<i>Tetranychus bimaculatus</i> Harvey: XXIV.14 bispotted spider mite - sweet potato (two-spotted is already in use)						x	
<i>Tetranychus cinnabarinus</i> (Bois.) = <i>T.</i> telarius (Linne)							
<i>Tetranychus desertorum</i> Banks: XXIV.14 desert spider mite - cantaloupe, chayote, cucumber, eggplant, squash, watermelon	x				x		
<i>Tetranychus marianae</i> McGreg.: XXIV.14 Mariana spider mite - sweet potato					x		

Scientific names, common names crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Tetranychus sexmaculatus</i> Riley = <i>T. urticae</i> Koch							
<i>Tetranychus telarius</i> (Linne): XXIV.14 carmine spider mite - beans, papaya			x				x
<i>Tetranychus urticae</i> Koch: XXIV.14 two-spotted spider mite - avocado	x						
<i>Tetranychus</i> sp.: XXIV.14 no common name - beans, citrus, corn, cucumber, eggplant, papaya, sorghum, watermelon, cantaloupe	x	x		x	x		x
<i>Tettigella appropinquans</i> (Fowler): QQ6 leafhopper - corn	x						
<i>Tettigella coeruleovittata</i> (Sign.) = <i>Metascarta coeruleovittata</i> (Sign.)							
<i>Tettigella miniaticeps</i> Fowler: QQ6 leafhopper - corn				x			
<i>Tettigella sexlineata</i> (Sign.) = <i>Graphocephala sexlineata</i> (Sign.)							
<i>Tettigonia induta</i> (Fowl.) = <i>Graphocephala induta</i> (Fowl.)							
<i>Thecla basilides</i> (Geyer): U 23 pineapple borer - pineapple	x						
<i>Therioaphis maculata</i> (Buckton): QQ2 spotted alfalfa aphid - pastures	x						
<i>Thrips tabaci</i> Lind.: P4 onion thrips - onion, cauliflower, cabbage, beans, cucumber, cantaloupe, tomato, garlic	x	x	x	x	x	x	x
<i>Thrips</i> spp.: P4 thrips - beans	x						
<i>Thyanta antiguensis</i> (Westw.): Q15 Antigua stinkbug - beans	x	x					x
<i>Tyanta perditor</i> (Fabr.): Q15 no common name - corn, sorghum	x	x		x		x	
<i>Tibraca limbativentris</i> Stål: Q15 no common name - rice						x	
<i>Tomaspis inca</i> Guer.: QQ4 spittlebug - papaya	x	x		x		x	x
<i>Tomaspis jugata</i> Fowler = <i>Aenolamia postica jugata</i> Fowler							
<i>Tomaspis</i> sp.: QQ4 spittlebug - beans			x				
<i>Toumeyella</i> sp.: QQ8 no common name - citrus			x				

Scientific names, common names crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Toxoptera aurantii</i> (Fonscolombe): QQ2 black citrus aphid - coffee, citrus	x	x	x	x	x	x	x
<i>Toxoptera citricida</i> (Kirkaldy): QQ2 brown citrus aphid - citrus	x						
<i>Toxoptera graminum</i> (Rond.) = <i>Schizaphis</i> <i>graminum</i> (Rond.)							
<i>Toxotrypana curvicauda</i> Gerst.: X35 papaya fruit fly - papaya	x	x	x	x	x	x	x
<i>Trialeurodes citri</i> (Ashmead) = <i>Dialeurodes citri</i> (Ashmead)							
<i>Trialeurodes vaporariorum</i> (Westw.): QQ1 greenhouse whitefly - beans and other grains	x	x	x	x		x	x
<i>Trialeurodes</i> sp.: QQ1 bean whitefly - beans, cantaloupe, chayote, cucumber, potato, squash, tomato, watermelon	x	x					
<i>Tribolium castaneum</i> Hkst.: V46 red flour beetle - stored grains	x	x	x	x	x	x	x
<i>Tribolium confusum</i> Duval: V46 confused flour beetle - stored grains	x	x	x	x	x	x	x
<i>Tribolium</i> spp. E.: V46 no common name - stored grains	x						
<i>Trichobaris championi</i> Barb.: V19 tomato stem borer - tomato	x						
<i>Trichobaris trinotata</i> (Say): V19 potato stem borer - potato	x						
<i>Trichoplusia ni</i> (Hübner): U29 cabbage looper - cabbage, cotton, cantaloupe, watermelon, cucumber, squash lettuce	x		x	x	x	x	x
<i>Trichoplusia oxigramma</i> (Gug.): U29 no common name - tomato, beans					x		
<i>Trigona silvestriana</i> Vach.: W3 stingless bee - Transmits Moko disease to banana and plantain, mango	x	x	x	x	x	x	x
<i>Trioza anceps</i> Tuthill: QQ19 avocado psylla - avocado	x	x	x		x		
<i>Trioza magnoliae</i> (Ashmead): QQ19 avocado gall psyllid - avocado	x	x					
<i>Trypeta ludens</i> Loew = <i>Anastrepha</i> <i>ludens</i> (Loew)							
<i>Trypoperemnon</i> spp. = <i>Premnotrypes</i> sp.							

Scientific names, common names,
crops affected

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Tylozygus fasciatus (Walker): QQ6 leafhopper - corn	x	x	x	x	x	x	x
Tymnes sp.: V13 no common name - potato				x			
Typophorus sp. = Tymnes sp.							
Tyroglyphus siro (L) = Acarus siro (L.)							
Unaspis citri (Comstock): QQ8 white scale - citrus	x	x	x	x	x	x	x
Urbanus proteus (L.): U19 bean leaf roller - beans	x				x		
Vanduzea segmentata (Fowl.): QQ16 no common name - corn	x	x				x	x
Vinsonia stellifera (Westw.): QQ8 star scale - mango					x		
Volucella esuriens (Fabr.): X32 papaya syrphid - papaya	x						
Walkeriana ovilla Green: QQ8 no common name - citrus		x					
Willistoniella pleuropunctata (Wied.): X-Ropalomeridae - no common name - citrus				x			
Xenochalepus signaticollis (Baly): V13 bean leaf mining beetle - beans, cabbage	x	x		x	x	x	
Xubida dentiliniatella Barnes + Mcd.: U8 no common name - pastures, sugarcane	x						
Zabrotes subfasciatus (Boh.): V7 bean bruchid - stored beans, stored grain in general	x	x	x	x	x	x	x
Zeadiatraea grandiosella (Dyar.): U8 southwestern corn borer - corn, sorghum	x						
Zeadiatraea lineolata (Wlk.): U8 lined corn borer - corn, sugarcane, sorghum	x	x	x		x	x	x
Zeadiatraea muellerella (D. & H.): U8 no common name - corn	x						
Zeadiatraea spp.: U8 corn borer - corn			x	x	x	x	x
Zelus laevicollis Champion: Q18 assassin bug - predator	x						
Zelus longipes (L.): Q18 assassin bug - predator	x						
Zelus sp.: Q18 no common name - predator of diseases of cantaloupe, pastures, potato	x						

Scientific names, common names, crops affected	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Zygospila signatipennis (Stål.): V13 leaf beetle - beans, corn	x		x				
Zulia vilior costaricensis Fennah: QQ4 no common name - corn						x	

APPENDIX IV

PHYLUM, CLASS, ORDER, AND FAMILY NAMES

Phylum Mollusca

Gastropoda (Subclass Pulmonata)

- I. Stylommatophora.....snails and slugs
 - 1. Achatinidae
 - 2. Helicidae
 - 3. Limacidae
 - 4. Zonitidae

Phylum Arthropoda

Crustacea

- II. Isopoda pillbugs and sowbugs
 - 1. Asellidae

Diplopoda millipedes

- III. Polyxenida
- IV. Glomerida
- V. Polydesmida
 - 1. Eurydesmidae
 - 2. Euryuridae
 - 3. Polydesmidae
 - 4. Strongylosomatidae
- VI. Chordeumida
 - 1. Lysiopetalidae.....crested millipedes
- VII. Julida
 - 1. Julidae
- VIII. Spirobolida
 - 1. Spirobolidae
- IX. Spirostreptida
- X. Cambalida
- XI. Platydesmida
- XII. Polyzoniida

Chilopoda centipedes

- XIII. Scutigermorpha
 - 1. Scutigerae
- XIV. Lithobiomorpha
 - 1. Henicopidae
 - 2. Lithobiidae
- XV. Scolopendromorpha
 - 1. Scolopendridae
- XVI. Geophilomorpha
 - 1. Dignathodontidae
 - 2. Geophilidae

- Symphyla symphylans
 XVII. (Order name withheld pending further investigation)
 1. Scutigereidae
- Arachnida
- XVIII. Scorpionida scorpions
 XIX. Chelonethida pseudoscorpions
 XX. Solpugida.....solpugids
 XXI. Pedipalpida whipscorpions
 XXII. Phalangidadaddylonglegs, harvestmen
 XXIII. Araneida.....spiders
 1. Agelenidae funnel-web weavers
 2. Epeiridaeorb weavers
 3. Linyphiidaesheet-web spiders
 4. Lycosidae.....wolf spiders
 5. Micryphantidae.....dwarf spiders
 6. Oxyopidae.....lynx spiders
 7. Pisauridae nursery-web spiders
 8. Salticidaejumping spiders
 9. Scytodidae.....spitting spiders
 10. Theraphosidaetarantulas
 11. Theridiidaecomb-footed spiders
 12. Thomisidae.....crab spiders
 XXIV. Acarina mites and ticks
 1. Acaridae acarid mites
 2. Argasidae.....soft-backed ticks
 3. Carpoglyphidae dried-fruit mites
 4. Dermanyssidae dermanyssid mites
 5. Demodicidae.....follicle mites
 6. Eriophyidae eriophyid mites
 7. Eupodidae.....eupodid mites
 8. Ixodidae.....hard-backed ticks
 9. Psoroptidae.....scab mites
 10. Pyemotidae pyemotid mites
 11. Sarcoptidae.....itch mites
 12. Tarsonemidae.....tarsonemid mites
 13. Tenuipalpidae.....false spider mites
 14. Tetranychidae.....spider mites
 15. Trombiculidae chigger mites
 16. Trombididae.....trombidid mites
- Insectainsects
- A. Proturaproturans
1. Acerentomidae
 2. Eosentomidae

- B. Thysanurabristletails
 1. Lepismatidae..... firebrats, silverfish
 2. Machilidae..... machilids
- C. Entotrophi
 1. Campodeidaecampodeids
 2. Japygidae japygids
- D. Collembola springtails
 1. Entomobryidae
 2. Isotomidae
 3. Onychiuridae
 4. Poduridae
 5. Sminthuridae
- E. Ephemeroptera mayflies
 1. Baetidae
 2. Baetiscidae
 3. Caenidae
 4. Ephemerellidae
 5. Ephemeridae
 6. Heptageniidae
 7. Leptophlebiidae
 8. Oligoneuriidae
 9. Polymitarcidae
 10. Potamanthidae
 11. Siphonuridae
- F. Odonata.....damselflies and dragonflies
 1. Aeshnidae
 2. Agrionidae
 3. Coenagrionidae
 4. Cordulegastridae
 5. Corduliidae
 6. Gomphidae
 7. Lestidae
 8. Libellulidae
 9. Petaluridae
- G. Plecopterastoneflies
 1. Capniidae
 2. Leuctridae
 3. Nemouridae
 4. Peltoperlidae
 5. Perlidae
 6. Pteronarcidae
 7. Taeniopterygidae

- H. Orthoptera.....cockroaches, grasshoppers and allies
1. Acrididae.....grasshoppers
 2. Blattidae.....cockroaches
 3. Gryllacrididae.....cave and camel crickets
 4. Gryllidae.....crickets
 5. Gryllotalpidae.....mole crickets
 6. Mantidae.....praying mantids
 7. Phasmatidaewalkingsticks
 8. Tetrigidae.....pygmy grasshoppers
 9. Tettigoniidae.....longhorn grasshoppers and katydids
 10. Tridactylidae.....pygmy mole crickets
- I. Dermaptera.....earwigs
1. Forficulidae
 2. Labiduridae
 3. Labiidae
- J. Embioptera.....embiids or webspinners
1. Anisembiidae
 2. Embiidae
 3. Oligembiidae
 4. Oligotomidae
- K. Isopteratermites
1. Hodotermitidae
 2. Kalotermitidae
 3. Rhinotermitidae
 4. Termitidae
- L. Psocopterabooklice and psocids
1. Liposcelidaebooklice
 2. Psocidae.....psocids
- M. Zorapterazorapterons
1. Zorotypidae
- N. Mallophagachewing lice
1. Gyropidaerodent chewing lice
 2. Menoponidaepoultry body lice
 3. Philopteridae.....feather chewing lice
 4. Trichodectidae.....mammal chewing lice
- O. Anoplurasucking lice
1. Haematopinidaewrinkled sucking lice
 2. Hoplopleuridae.....small-mammal sucking lice
 3. Linognathidae.....smooth sucking lice
 4. Pediculidaehuman lice

P. Thysanoptera.....thrips

1. Aeolothripidae
2. Heterothripidae
3. Phlaeothripidae
4. Thripidae

Q. Hemiptera (Heteroptera).....true bugs

1. Anthocoridae.....flower bugs, minute pirate bugs
2. Aradidae.....flat bugs
3. Belostomatidae.....giant water bugs
4. Berytidae.....stilt bugs
5. Cimicidaebat, bed, and bird bugs
6. Coreidae.....coreid bugs
7. Corixidae.....water boatmen
8. Gelastocoridae.....toad bugs
9. Gerridae.....water striders
10. Lygaeidae.....lygaeid bugs
11. Miridae.....plant bugs
12. Nabidae.....damsel bugs
13. Nepidae.....waterscorpions
14. Notonectidae.....backswimmers
15. Pentatomidae.....stink bugs
16. Phymatidae.....ambush bugs
17. Pyrrhocoridae.....pyrrhocorid bugs
18. Reduviidaeassassin bugs
19. Saldidae.....shore bugs
20. Tingidae.....lace bugs

QQ. Hemiptera (Homoptera).....aphids, leafhoppers, planthoppers,
scale insects, and allies

1. Aleyrodidaewhiteflies
2. Aphididaeaspids or plantlice
3. Asterolecaniidaepit scales
4. Cercopidaespittlebugs
5. Chermidaebark aphids, gall aphids, and phylloxeras
6. Cicadellidaeleafhoppers
7. Cicadidaecicadas
8. Coccidaesoft scales
9. Dactylopiidaedactylopiid scales
10. Delphacidaedelphacid planthoppers
11. Diaspididaearmored scales
12. Flatidaeflatid planthoppers
13. Fulgoridaefulgorid planthoppers
14. Issidaeissid planthoppers
15. Margarodidaemargarodid scales
16. Membracidaetreehoppers
17. Ortheziidaeensign scales
18. Pseudococcidaemealybugs
19. Psyllidaejumping plantlice or psyllids

- R. Neuroptera (Sialodea)
 - 1. Corydalidae.....dobsonflies
 - 2. Sialidae.....alderflies

- RR. Neuroptera (Raphidiodea)
 - 1. Raphidiidae.....snakeflies

- RRR. Neuroptera (Planipennia)
 - 1. Chrysopidae.....green lacewings
 - 2. Coniopterygidae.....dustywings
 - 3. Hemerobiidae.....brown lacewings
 - 4. Mantispidae.....mantispids
 - 5. Myrmeleontidae.....antlions
 - 6. Sisyridaespongillaflies

- S. Mecopterascorpionflies
 - 1. Bittacidae.....hangingflies
 - 2. Boreidae.....snow scorpionflies
 - 3. Panorpidae.....scorpionflies

- T. Trichoptera.....caddisflies
 - 1. Hydropsychidae
 - 2. Limnephilidae
 - 3. Phryganeidae

- U. Lepidoptera.....butterflies, moths, skippers
 - 1. Aegeriidae.....clearwing moths
 - 2. Arctiidae.....tiger moths and allies
 - 3. Bombycidae.....silkworm moths
 - 4. Citheroniidaeroyal moths
 - 5. Coleophoridae.....casebearer moths
 - 6. Cosmopterigidae
 - 7. Cossidaecarpenterworm moths
 - 8. Crambidaegrass moths
 - 9. Danaidae.....milkweed butterflies
 - 10. Dioptidae
 - 11. Epipaschiidae
 - 12. Galleriidae wax moths
 - 13. Gelechiidae.....gelechiid moths
 - 14. Geometridae.....geometrid moths
 - 15. Glyphipterygidae
 - 16. Gracillariidae.....leaf blotch miners
 - 17. Heliozelidaeshield bearers
 - 18. Hepialidae.....hepialid moths
 - 19. Hesperidaeskippers
 - 20. Yponomeutidaeermine moths
 - 21. Incurvariidae
 - 22. Lasiocampidae.....tent caterpillar moths and allies
 - 23. Lycaenidae.....blues, coppers, hairstreaks
 - 24. Limacodidae.....slug caterpillar moths

25. Lymantriidae.....tussock moths
26. Lyonetiidae
27. Megalopygidae.....flannel moths
28. Nepticulidae
29. Noctuidaeowlet moths and underwings
30. Notodontidaenotodontid moths
31. Nymphalidae.....brush-footed butterflies
32. Oecophoridae
33. Olethreutidae.....olethreutid moths
34. Papilionidae.....swallowtail butterflies
35. Phaloniidae
36. Phycitidae
37. Pieridae.....whites and sulfur butterflies
38. Prodoxidaeyucca moths
39. Psychidaebagworm moths
40. Pterophoridae.....plume moths
41. Pyralidae.....pyralid moths
42. Pyraustidaepyraustid moths
43. Saturniidaegiant silkworm moths
44. Satyridae.....satyr butterflies
45. Scythridae
46. Sphingidaesphinx moths
47. Tineidaeclothes moths
48. Tischeriidae
49. Tortricidaeleaf roller moths
50. Zygaenidaeleaf skeletonizer moths

- V. Coleoptera beetles
1. Anobiidae.....deathwatch and drugstore beetles
 2. Anthicidaeant-like flower beetles
 3. Anthribidaefungus weevils
 4. Belidaebelid weevils
 5. Bostrichidaefalse powder-post beetles
 6. Brentidaebrentid beetles
 7. Bruchidaeseed beetles
 8. Buprestidae.....flatheaded or metallic wood borers
 9. Byturidae.....fruitworm beetles
 10. Cantharidaesoldier beetles
 11. Carabidae.....ground beetles
 12. Cerambycidaelong-horned beetles or
roundheaded wood borers
 13. Chrysomelidaeleaf beetles
 14. Cicindelidaetiger beetles
 15. Cleridaecheckered beetles
 16. Coccinellidaelady beetles
 17. Cryptophagidae.....cryptophagid beetles
 18. Cucujidae.....cucujid beetles or flat bark beetles
 19. Curculionidaesnout beetles or weevils
 20. Dermestidaedermestid beetles
 21. Dytiscidae.....predaceous diving beetles

22. Elateridae click beetles, wireworms
23. Cyprinidae.....whirligig beetles
24. Histeridae hister beetles
25. Hydrophilidae water scavenger beetles
26. Lampyridae fireflies
27. Languriidae languriid beetles
28. Lucanidae stag beetles
29. Lycidae net-winged beetles
30. Lyctidae powder-post beetles
31. Lymexylidae timber beetles
32. Meloidae blister beetles
33. Mordellidae tumbling flower beetles
34. Mycetophagidae hairy fungus beetles
35. Nitidulidae sap beetles
36. Oedemeridae oedemerid beetles
37. Ostomatidae ostomatid beetles
38. Passalidae passalid beetles
39. Phalacridae shining fungus beetles
40. Ptinidae spider beetles
41. Scarabaeidae scarabs
42. Scolytidae bark beetles
43. Silphidae carrion beetles
44. Staphylinidae rove beetles
45. Stylopidaetwisted-winged insects
46. Tenebrionidae darkling beetles

- W. Hymenopteraants, bees, sawflies, wasps, and allies
1. Agaonidae fig wasps
 2. Andrenidae andrenid bees
 3. Apidae.....bumble, carpenter, honey, and stingless bees
 4. Argidae argid sawflies
 5. Braconidaebraconids
 6. Cephidaestem sawflies
 7. Chalcididae chalcids
 8. Chrysididae cuckoo wasps
 9. Cimbicidae cimbicid sawflies
 10. Colletidae colletid bees
 11. Cynipidae.....cynipids or gall wasps
 12. Diprionidaeconifer sawflies
 13. Eurytomidaeeurytomids, jointworms, seed chalcids
 14. Formicidae ants
 15. Halictidae halictid bees, sweat bees
 16. Ichneumonidae ichneumons
 17. Megachilidae leafcutting bees
 18. Mutillidae velvet-ants
 19. Pamphiliidae web-spinning sawflies
 20. Pelecinidae..... pelecinid wasps
 21. Pompilidae spider wasps
 22. Scelionidae scelionid wasps
 23. Siricidaehorntails

24. Sphecidae...cicada killers, mud daubers, and sand wasps
25. Tenthredinidae.....sawflies
26. Tiphidae.....tiphiid wasps
27. Torymidae.....torymids
28. Trichogrammatidae..... minute egg parasites
29. Vespidae.....hornets, yellow jackets, and potter wasps

- X. Dipteraflies
1. Agromyzidaeleaf miner flies
 2. Asilidae robber flies
 3. Bibionidae..... march flies
 4. Bombyliidae bee flies
 5. Calliphoridae..... blow flies
 6. Cecidomyiidae..... gall midges
 7. Ceratopogonidae biting midges
 8. Chaoboridae..... phantom midges
 9. Chironomidae midges
 10. Chloropidae chloropid flies
 11. Culicidae mosquitoes
 12. Cuterebridae..... rabbit bots, rodent bots
 13. Dolichopodidae long-legged flies
 14. Drosophilidae vinegar flies
 15. Empididae..... dance flies
 16. Gasterophilidae..... horse bots
 17. Hippoboscidae..... louse flies
 18. Anthomyiidae.....anthomyiid flies
 19. Muscidae.....house flies, stable flies, and allies
 20. Mycetophilidae..... fungus gnats
 21. Oestridaebot and warble flies
 22. Otitidae.....otitid flies
 23. Phoridae.....humpbacked flies
 24. Piophilidae..... skipper flies
 25. Pipunculidae big-headed flies
 26. Psilidae
 27. Psychodidae.....moth flies
 28. Rhagionidae.....snipe flies
 29. Sarcophagidae.....flesh flies
 30. Simuliidae..... black flies
 31. Stratiomyidae.....soldier flies
 32. Syrphidae.....flower flies
 33. Tabanidae deer and horse flies
 34. Tachinidae..... tachina flies
 35. Tephritidae..... fruit flies
 36. Tipulidae..... crane flies

- Y. Siphonapterafleas
1. Ceratophyllidae
 2. Pulicidae pulicid fleas
 3. Tungidaejiggers and sticktights

A CHECKLIST OF THE DISEASES OF A SELECTED GROUP OF THE ECONOMICALLY IMPORTANT CROPS OF CENTRAL AMERICA

I N D E X

Part "A" - Food Crops

- | | |
|------------|--------------|
| 1. Corn | 5. Potatoes |
| 2. Beans | 6. Wheat |
| 3. Sorghum | 7. Sugarcane |
| 4. Rice | |

Part "B" - Horticultural Crops

- | | |
|------------|--------------|
| 1. Papaya | 5. Coconut |
| 2. Banana | 6. Annona |
| 3. Mango | 7. Pineapple |
| 4. Avocado | 8. Citrus |

Part "C" - Vegetable Crops

- | | |
|------------|------------------|
| 1. Tomato | 7. Cucurbits |
| 2. Carrot | 8. Beets |
| 3. Cabbage | 9. Yuca |
| 4. Pepper | 10. Malanga |
| 5. Onion | 11. Lettuce |
| 6. Peas | 12. Sweet potato |

Part "D" - Cash Crops

- | | |
|-----------|----------------|
| 1. Coffee | 4. Yam |
| 2. Cotton | 5. Rubber |
| 3. Cacao | 6. Lemon grass |

Part "E" - Forage & Pasture Crops

- | | |
|--------------------|-------------------|
| 1. Alfalfa | 5. Guinea grass |
| 2. Bermuda grass | 6. Para grass |
| 3. Pangola grass | 7. Imperial grass |
| 4. Guatemala grass | |

1/ For each crop all reported or known diseases are listed.
 (#) Priorities are indicated where work or control measures would result in significant increases in overall production.
 (#-X) Potentially dangerous or otherwise unusual diseases.
 See these in summary at end.

PART "A" -- FOOD CROPS

DISTRIBUTION BY COUNTRIES

English Al--Indian Corn or Maize	Spanish Maiz	Scientific Zea mays L.		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Disease										
Angiopsora zeae mains II & III rust, 0 & I unknown				x		x		x		x
Aspergillus spp. kernel rot									x	x
Bacterium stewartii E.F.Sm. bacterial wilt					x				x	
Cephalosporium acremonium cda. black-bundle								x		
Cercospora sorghi Ell. & Ev. leaf spot					x	x	x			
C. zeae-maydis Tehon & Daniels gray leaf spot				x					x	x
Cercosporelia sp.									x	
Cladosporium herbarium (Pers.) ex Lk. black mold										x
Cochliobolus heterostrophus Drechs. (Helminthosporium maydis Nisik & Miyake leaf blotch				x	x			x	x	x
Colletotrichum graminicola (Ces.) G. W. Wils. anthracnose										x
Curvularia geniculata (Tracy & Earle) Boedijn leaf spot						x				
C. lunata (Walker) Boedijn leaf spot								x		x
Darluka filum (Biv & Fr.) Cost. overgrowing Puccinia sorghi						x				x
Diplodia Macrospora Earl dry rot					x				x	x
(#) D. zeae (Schw.) Lev. (D. maydis (Berk.) Sacc.) stalk and ear rot				x	x	x		x		x
Epicoccum neglectum Desm. basal leaf spot				x						
Fusarium graminearum Schwabe see gibberella zeae F. moniliforme Sheldon see gibberella Fujikuroi F. spp. (Several unidentified species are causing trouble)				x		x	x	x	x	x
Gibberella fujikuroi (Saw.) Wr. seed rot and seedling blight				x		x		x	x	x
(#) G. zeae (Schw.) Petch (also G. saubinetii) stalk & ear rot					x	x		x	x	x
Gloeocercospora sorghi D. Bain. & Edg. zonate leaf spot										x
Helminthosporium carbonum Ullstrup leaf spot					x	x			x	
H. maydis Nisik. & Miyake see Cochliobolus heterostrophus										
H. sativum Pam., King & Blakke				x						
H sp.										x
(#) H. Turcicum Pass. leaf blight				x	x	x	x	x	x	x
Macrophomina phaseoli (Maubl.) Ashby (Sclerotium bataticola) charcoal rot								x		
Marasmius sp.									x	
Nigrospora oryzae (Berk & Br.) Petch				x	x					x

DISTRIBUTION BY COUNTRIES

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>N. sphaerica</i> (Sacc.) Mason			x				
<i>Penicillium</i> spp.						x	x
<i>Phyllachora maydis</i> Maub. tar spot	x	x	x	x	x	x	x
<i>Phyllosticta</i> sp.						x	
<i>Physalospora zeicola</i> Ell. & Ev. has been reported in N.A. and adjacent S.A. but no C.A. reports							
<i>Physoderma maydis</i> Miyake brown spot	x	x	x	x	x	x	x
<i>Physopella zea</i> Cumm. Ram. (<i>Angiospora pallescens</i> (Arth.) Mains) Guatemala rust	x	x	x			x	x
<i>Phytomonas stewartii</i> (E.F.Sm.) Bergey	x						
See <i>Xanthomonas stewartii</i> (E.F.Sm.) Dowson							
<i>Pseudomonas</i> sp.		x					
(#) <i>Puccinia polysora</i> Underw. II & III tropical leaf rust	x	x	x	x	x	x	x
(#) <i>P. sorghi</i> Schw. (<i>P. maydis</i> Bereng.) II & III rust (O & I reported on <i>Oxalis</i> spp.)	x	x	x	x	x	x	x
<i>Pythium</i> spp.	x						x
<i>P. graminicola</i> Subr.	x						
<i>Rhizoctonia solani</i> Kuhn							x
<i>Rhizopus nigricans</i> Ehr. seed rot						x	x
<i>Rhynchosporium oryzae</i> Hashioka & Yokogi						x	
<i>Sclerospora</i> sp. downy mildew	x						
<i>Schrotium bataticola</i> Taub. see <i>Macrophomina phaseoli</i>							
<i>S. rolfsii</i> Sacc.							x
<i>Septoria zeicola</i> Stout	x						
<i>Sphacelotheca reiliana</i> (Kuhn) Clint smut	x	x	x				
<i>Urocystis agropyri</i> (Preuss.) Schroet						x	
<i>Ustilanginoidea virescens</i> (Cke.) Tak. false smut	x						x
<i>Ustilago maydis</i> (DC) Cda. smut	x	x	x		x	x	x
(#) Virus Stunt or achaparramiento	x	x	x	x	x	x	x
A number of easily confused and not well identified virus caused diseases:							
mosaic				x			
stripe and dwarf				x	x		x
estriamiento					x		
tajado				x			
two types of enanismo	x	x					
what appears to be 3 strains of DCM		x	x				
and other types of enanismo described from adjacent S.A. all need investigation							
<i>Xanthomonas stewartii</i> (E.F.Sm.) Dowson	x						

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Unidentified:							
Genetic spot				x			x
Birds eye spot				x			x
Mancha redonda de San Isidro				x			x
<u>English</u> <u>Spanish</u> <u>Scientific</u>							
A2-- Beans Frijol Phaseolus vulgaris L.							
Alternaria brassicae (Berk.) Sacc. f. phaseoli Brun.	x						
A. fasciculata (Gke. & Ell.) L.R. Jones & Grout (A. tenuis Auct.)	x						
Aristastoma oeconomicum (Ell. & Tracy) Tehon leaf spot, only reported on Vigna sinensis				x			
Ascochyta bolthauseri Sacc. leaf & pod spot		x				x	
A. phaseolorum Sacc. - also on weed hosts		x	x				x
Cercospora canescens Ell. & Mart. leaf spot Also on Vigna	x		x				
C. cruenta Sacc. Also on Vigna sinensis	x		x	x			
C. spp.				x	x	x	
(#) Chaetoseptoria wellmanii Stevenson grey leaf spot Also on Vigna sinensis - reported increas- ing	x	x	x	x	x	x	
Cladosporium sp.				x		x	
(#) Colletotrichum lindemuthianum (Sacc. & Magn.) Briosi & Cav. anthracnose mostly in cold zones	x	x	x	x	x	x	x
C. truncatum (Schw.) Andrus & W.D. Moore					x		
Cornebacterium flaccumfaciens (Hedges) Dowson bacterial wilt	x						
Elsinoe phaseoli Jenkins scab			x				
Erysiphe polygoni DC powdery mildew Also P. aureus	x	x	x		x	x	x
Fusarium oxysporium Schlecht. f. Phaseoli Kendrick & Snyder Also P. aureus by f. Vasinfectum (Atk.) Snyder & Hansen	x	x	x		x	x	x
F. Solani (Mart.) Appel & Wr. f. Phaseoli (Burk.) Snyder & Hansen	x				x	x	
(#) Isariopsis griseola Sacc. angular leaf spot cold zones in dry season	x	x	x	x	x	x	x
Macrophomina phaseoli (Maub.) Ashby charcoal rot							x

DISTRIBUTION BY COUNTRIES

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Myrmaecium roridum</i> Tode pod spot			x				
<i>Periconia pycnospora</i> Fres. pod spot			x				
<i>Phyllosticta phaseolina</i> Sacc. pod spot on P. aureus					x		
P. sp.						x	
<i>Phytophthora parasitica</i> Dast. stem & pod	x					x	
<i>P. phaseoli</i> Thaxt. downy mildew	x	x	x			x	x
<i>Pseudomonas phaseolicola</i> (Burkh.) Dowson 17-20 degrees halo blight	x					x	
<i>Pseudomonas solanacearum</i> (E.F.Sm.) E. F.Sm. brown rot	x	x					
<i>Pythium aphanidermatum</i> (Edson) Fitz. wilt	x					x	x
<i>P. debaryanum</i> Hesse root rot & pod rot	x					x	
<i>P. ultimum</i> Trow. root rot	x					x	
P. spp.		x	x				x
<i>Ramularia phaseolina</i> Petrak leaf spot		x		x	x		
(#) <i>Rhizoctonia microsclerotia</i> Matz (<i>Corticium microsclerotia</i> 2/ (Matz) Webber) or <i>Pellicularia filamentosa</i> (Pat.) Rogers web blight - also on wild <i>Mucuna pica pica</i>	x	x	x	x	x	x	x
(#) <i>R. Solani</i> Kuehn root rot - root rot is often not recognized as a limiting factor	x		x	x	x	x	x
<i>Sclerotinia sclerotiorum</i> (Lib.) D By. white mold-espumilla	x	x	x		x	x	x
<i>Sclerotium bataticola</i> Taub. - See <i>Macro- phomina phaseoli</i>							
<i>Sclerotium rolfsii</i> Sacc. southern blight- maya blanca	x			x	x	x	x
(#) <i>Uromyces phaseoli</i> (Pers.) Wint var. Typica Arth. II & III rust--the O & I also but rare on this host. Most severe at high humidities and low temperatures	x	x	x	x	x	x	x
<i>Vermicularia polytricha</i> Cke. pod rot			x				
<i>Xanthomonas phaseoli</i> (E.F. Smith) Dowson bacterial wilt, mild above 20 degrees	x	x	x	x	x	x	x
<i>X. solanacearum</i> (E.F.Smith) Dowson see <i>Pseudomonas solanacearum</i>							
(#) Virus:							
Complex--mosaic		x	x	x	x	x	x
Yellow mosaic		x	x	x	x	x	x
Rugose mosaic & abutilon mosaic		x	x	x	x	x	
Also something similar to cotton bunchy top		x	x		x		

2/ A revision in the nomenclature of the
Rhizoctonias is underway.

DISTRIBUTION BY COUNTRIES

A3--Sorghum (S) Sorghum vulgare Pers.
 Johnson Grass (J) S. halepense (L.) Pers.
 Sudan Grass (Su) S. vulgare var.
 sudanese (Piper) Hitchc.

Disease

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Ascochyta sorghi Sacc. leaf spot (S) & (J)	x						
Aspergillus sp. seed rot (S)							x
Cercospora sorghi Ell. & Ev. gray leaf spot (S)			x	x			
(J)							x
Colletotrichum falcatum Went. conidial stage of Physalospora tucumanensis Speg. (S)							x
(Su)					x		
C. Graminicola (Ces.) G.W. Wils (C. lineola Cda.) (S)			x	x	x		x
(J)	x						x
(Su)					x		
C. sp. (S)						x	
Fusarium sp. (S)							x
Gibberella fujikuroi (Saw.) Wr. (Fusarium moniliforme Sheldon) (S)			x				x
G. zeae (Schw.) Petch. (G. saubinetti (Mont.) Sacc.) (S)		x					
Gloeocercospora sorghi D. Bain & Edg. zonate leaf spot (S)			x		x	x	x
(J)	x						x
(Su)					x		
Guignardia sp. (S)			x				
(#) Helminthosporium turcicum Pass. leaf blight (Su)					x		
(S)		x	x	x	x	x	x
Leptosphaeria sacchari B de Haan (S)			x				
Macrophomina phaseoli (Maub.) Ashby dry root rot (S)					x		
Penicillium sp. seed mold (S)							x
Pseudomonas andropogoni (E.F. Smith) Stapp (S)				x		x	
P. syringae v. Hall (S)				x			
(#) Puccinia purpurea Cke. II & III rust -- O & I stages not known. Reduces forage value and often makes Johnson grass unusable for forage. (S)	x	x	x	x	x	x	x
(J)	x	x		x			x
(Su)		x			x		
P. sorghi Schw. (S)							x
Spacelotheca Cruenta (Kuhn) Potter loose smut (S)			x		x		
S. holci Jacks. (J)	x						
S. reiliana (Kuhn) Clint (S)	x	x		x			

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
(#) <i>S. sorghi</i> (Lk.) Clint covered smut -- losses up to 80% have been reported (S) (J)	x x	x	x	x	x	x	x
<i>Selenophoma bromigena</i> (Sacc.) Sprague (S)						x	
<i>Urocystis agropyri</i> (Preuss.) Schroet (S)						x	
(#) Virus mosaic and streak (S) and similar to corn stunt or DCM (S)			x		x		
There are no disease reports on these varieties from C.A., but the following are closely related, often integrated, and sometimes not separated:							
<i>Sorghum vulgare</i> Pers. varieties							
<i>caffrorum</i> (Thunb.) Hubb & Rehder							
<i>kafir durra</i> (Forsk.) Hubb & Rehder							
<i>dura</i>							
<i>roxburghii</i> (Stapf.) Haines							
<i>shallu</i>							
<i>subglabrescens</i> (Steud.) A. F. Hill							
<i>milo</i>							
<i>saccharatum</i> (L.) Boerl.							
<i>sorgho</i> or sweet sorghum							
<i>technicum</i> (Koern.) Jav. broomcorn							
A4-- <u>English</u> <u>Spanish</u> <u>Scientific</u>							
Rice		Arroz	<i>Oryza sativa</i> L.				
<i>Alternaria</i> sp.						x	
<i>Aspergillus</i> sp.						x	x
<i>Capnodium</i> sp.						x	
<i>Cephalosporium</i> sp.						x	
<i>Cephalothecium</i> sp.						x	
<i>Cercospora orizae</i> Miyake glume spot		x	x	x	x	x	x
<i>Cladosporium herbarium</i> (Pers.) ex Lk.	x		x				
<i>C. sp.</i>						x	
<i>Clasterosporium putrefaciens</i> (Fcl.) Sacc. leaf spot	x						
<i>Cochliobolus miyabeanus</i> Ito & Kuribay						x	
<i>Colletotrichum</i> sp.						x	x
<i>Curvularia lunata</i> (Wakk.) Boed. glume mold		x	x	x	x	x	x
<i>Entyloma orizae</i> H. & P. Syd. leaf smut (E. dactylidis (Pass.) Cif.)	x				x		x
<i>E. sp.</i>						x	
<i>Fusarium</i> spp.						x	x
(#) <i>Helminthosporium oryzae</i> B. de Haan brown spot. Creates special trouble for the seed crop	x	x	x	x	x	x	x

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
H. sigmoideum Cav. - Probably only a form without perithecial stage. See Leptosphaeria salvinii							x
Leptosphaeria orizina Sacc.					x		
L. Salvinii Catt. stem rot						x	x
Macrosporium sp.	x						
Neovossia horrida (Tak.) Padwick & Khan smut	x				x		x
N. Barclayana Brefeld							x
Nigrospora oryzae (Berk. & Br.) Petch kernel & sheath rot		x	x	x	x	x	x
Penicillium sp.						x	x
Phaeoseptoria oryzae Miyaki	x				x		
Phaeosphaeria orizae Miyaki					x		
Phyllosticta oryzina (Sacc.) Pod. (Mexico & Nicaragua reported as P. oryzae)	x				x		x
(#) Piricularia oryzae Cav. blast	x	x	x	x	x	x	x
Pleospora sp.	x					x	
Pseudomonas itoana Tochinai - See xanthomonas itoana (Toch.) Dowson. A grain spot observed on material from Thailand							x
Puccinia graminis Pers. f. oryzae Fragoso rust (reported as P. oryzae)						x	
Pythium sp.							x
Rhizoctonia grisea (Stevenson) Matz (Corticium sasakii) banded sheath rot							x
R. oryzae Ryker & Gooch (perhaps also R. Zeae Voorhees) bordered sheath rot			x				x
R. solani Kuhn							x
R. spp.		x	x	x	x	x	x
(#) Rynchosporium oryzae Hashioka & Yokogi leaf blight. Reported to be increasing in severity		x	x	x	x	x	x
Sclerotium rolfsii Sacc. seedling blight & collar rot	x		x			x	x
Sphaerella tulasnei Jancz.	x						
Trematosphaerella oryzae (Miyake) Padwick			x				
Ustilaginoidea vierens (ske.) Tak. false smut					x	x	x
(#) Virus white leaf or hoja blanca spread by Sogata sp. presumed under control by insect control		x	x	x	x	x	x
Virus - other symptoms reported are variegated plants, red streak, white stripe, and white tip (the nematode Aphelenchoides oryzae Yokoo)							x

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Xanthomonas itoana (Toch.) Dowson grain spot possibly only a synonym of X. orizae Yeda & Ishiyama							x
A5-- <u>English</u> Potato <u>Spanish</u> Papa <u>Scientific</u> Solanum tuberosum L.							
(#) Alternaria solani (Ell. & G. Martin) Sor. early blight	x	x	x	x	x	x	x
Bacillus amylobacter van Tieghem - see Clostridium butyricum		x					
B. mesentericus Trevisan - this is not recognized as a valid species and is probably B. subtilis Cohn	x						
B. subtilis Cohn	x						
Bacterium solanacearum (E. F.Sm.) Chester - see Pseudomonas solanacearum. Also referred to as Xanthomonas. Note that a revision in nomenclature involving Xanthomonas is expected.		x					
B. solani - probably Butylobacter. See below.		x					
Butylobacter solani Bakonyi							
Clostridium butyricum Prazmowski - secondary decay		x					
Corynebacterium sepedonicum (Spieck. & Kotth.) Skapt. & Burkn. ring rot							x
Dendryphium obstipum Pollack	x						
Erwinia carotovora (L. R. Jones) Holland market soft rot				x	x	x	x
Erysiphe polygoni DC ex Merat. powdery mildew	x						
Fusarium equiseti Corda is a good potato parasite (could be Pythium equisiti)		x					x
F. oxysporium Schlecht by Sn. & Hn.	x	x	x		x	x	x
(#) F. spp. dry rot	x						
Oidium sp.							
Pellicularia filamentoda (Pat.) Rogers - see Rhizoctonia solani							
Penicillium sp.			x				x
Phoma solanicola Prill. & Del.		x					
Phytophthora infestans (Mont.) de Bary late blight	x	x	x	x	x	x	x
P. parastica Dest. reported in West Indies as tuber rot but no C.A. reports							

Disease			MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Pythium equiseti - cannot find this species-- could it be Fusarium equiseti corda.				x					x
Pseudomonas solanacearum (E. F. Sm.) E. F. Smith bacterial wilt			x		x			x	x
Rhizoctonia solani Kuehn. scurf			x	x	x		x	x	x
Rhizopus nigricans Ehr. tuber rot			x						
Rosellinia sp. "Torbo"								x	
Sclerotium rolfsii Sacc.									x
Spongospora subterranea (Wallr.) Lagh. powdery scab			x					x	
(#) Streptomyces scabies (Thaxt.) Waksman & Henrici scab			x	x	x		x	x	x
(#-X) Thecaphora solani M. Barrus tuber smut In adjacent S.A. - by symptoms On S. stoloniferum Schlecht			x						x
Xanthomonas solanacearum (E.F. Sm.) Dowson see Pseudomonas solanacearum									
Root knot nematodes are reported									
Virus - various symptoms reported:									
Leaf roll				x			x		x
Mosaic			x	x			x	x	x
Purple-top (punta morada)			x	x					x
Rogose mosaic				x			x		
Bronzing							x		
<u>English</u>	<u>Spanish</u>	<u>Scientific</u>							
A6-- Wheat	Trigo	Triticum aestivum L. (T. vulgare vill. & T. durum Desf.)							
Alternaria tenuis Nees. ex Cda.			x						
Cladosporium herbarium (Pers.) Link glume mold. See also Mycosphaerella tulasnei (Jancz.) Lindau							x		
Fusarium graminearum Schwabe scab - See Gibberella zeae									
F. moniliforme Sheldon - See Gibberella fujikuroi									
(#) Gibberella fujikuroi (Saw.) Wr. humid areas				x					
G. zeae (Schw.) Petch root rot			x			x	x		
Helminthosporium giganteum Heald & Wolf						x			
H. graminum Rabenh. Mspt. ap. Schlechtendal						x			
(#) H. sativum Pam., King & Bakke blight				x	x	x	x		

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
H. spp.	x				x		
Mycosphaerella tulasnei (Jancz.) Lindau - This is the perfect stage of Cladosporium herbarium known only in culture					x		
(#) Puccinia glumarum (Schm.) Eriks & E. Henn. II & III stripe rust - O & I un- known	x	x	x				
P. graminis Pers. f. sp. Tritici Eriks. & E. Henn. II & III stem rust with O & I on Berberis & Mahonia spp.	x	x		x	x		x
P. recondita Rob. ex Desm. leaf rust	x				x		
P. rubigo-vera (DC) Wint f. sp. Tritici (Eriks.) Carleton II & III leaf rust	x	x	x	x	x		
Sclerospora macrospora Sacc. downy mildew	x						
Septoria tritici Rob. ex Desm. leaf blight in highlands	x	x	x				
Tilletia caries (DC) Tul. bunt	x	x			x		
T. foetida (Wallr.) Liro smooth-spored bunt Also reported in adjacent S.A.	x						
Urocystis tritici Koern. flag smut Also adjacent S.A.	x	x					
Ustilago nudo (Jens. Rost. smut	x						
U. perennans Rost.	x						
U. tritici (Pers.) Rost.	x	x	x		x		
Xanthomonas translucens (L.R. Jones, A. G. Johns & Reddy) Dowson	x				x		
<div> <div>English</div> <div>A7--Sugarcane</div> </div> <div> <div>Spanish</div> <div>Cana de Azucar</div> </div> <div> <div>Scientific</div> <div>Saccharum officinarum L.</div> </div>							
Cephalosporium sacchari Butler	x						
Ceratocystis Paradoxa (Dade) C. Moreau <u>3/</u> seed cane rot	x	x	x	x	x	x	x
Cercospora koepkei Kruger brown spot	x	x	x	x		x	x
C. sacchari V. B. de Haan	x	x	x	x	x	x	x
C. vaginae Kruger	x	x	x	x		x	x
Cladosporium spp.		x	x	x	x	x	x
Colletotrichum falcatum Went. red rot	x	x	x	x	x	x	x
<u>3/</u> The reader should see Taxonomy of the Genus Ceratocystis by John Hunt. Lloydia 19(1):1-59 1956.							

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Coniothyrium sacchari</i> (Massie) Prill. Also adjacent S.A.	x						
<i>Cytospora sacchari</i> Butl. sheath rot	x						
<i>Endoconidiophora paradoxa</i> (Deseynes) Davidson See <i>Ceratocystis paradoxa</i>	x						
<i>Epicoccum neglectum</i> Desm.	x						
(#) <i>Gibberella fujikuroi</i> (Saw.) Wr. (<i>Fusarium moniliforme</i> Sheldon) collar rot-- "pokkah boeng"	x		x		x	x	
(#) <i>Helminthosporium sacchari</i> (B. de Haan) Butl. eye spot	x	x	x	x	x	x	x
<i>H. stenospilum</i> Drechs. brown stripe--occurs in the West Indies and adjacent S.A. but no C.A. reports							
<i>Leptosphaeria sacchari</i> B. de Haan ring spot	x	x	x			x	x
<i>Ligniera vascularum</i> (Matz) Cook dry top rot--occurs in West Indies and adjacent S.A. but no C.A. reports.							
<i>Marasmius plicatulus</i> Peck	x	x					
<i>Melanconium sacchari</i> Mass. cane rot--see <i>Coniothyrium sacchari</i>							
<i>Nectria laurentiana</i> Marchal one cane trash	x						
<i>Nigrospora oryzae</i> (Berk. & Br.) Petch black mold							x
<i>Phyllosticta saccharicola</i> Speg. (see <i>Leptosphaeria sacchari</i> as this is considered to be its conidial stage)							x
<i>P. sp.</i>	x						
<i>Physalospora Tucumanensis</i> Speg. red rot-- See <i>Colletotrichum falcatum</i> the conidial stage in nature		x					
<i>P. spp.</i> dry rot (some <i>Diplodia</i> mentioned here)		x	x	x	x	x	x
<i>Piricularia orizae</i> Cav.						x	
<i>Pythium arrhenomanes</i> Dresch.	x	x					
<i>Scirrhia lophodermioides</i> Ell. & Ev.	x						
<i>Sclerospora sacchari</i> Miyaki mildew		x	x	x	x	x	x
<i>Sclerotium griseum</i> Stevenson	x						
<i>S. Rolfsii</i> Sacc.							x
<i>Stagnospora sacchari</i> Lo & Ling leaf scorch							x
Toxic exudate Spittle bug injury general							
<i>Uromyces Kuhnii</i> Kruger	x						
<i>Xanthomonas rubrilineans</i> (Lee et al) Starr & Burkh. red stripe			x		x	x	

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
X. vasculorum (Cobb) Dowson red stripe	x	x				x	x
Virus mosaic with B-4362 and POJ-2878 quite resistant - all C.A.							
Ratoon stunt			x				x
Streak & stunt					x		
PART "B" -- HORTICULTURAL CROPS							
B-1 <u>Papaya</u> <u>Carica papaya L.</u>							
Ascochyta caricae Pat. black spot	x		x				
Asperisporium caricae (Speg.) Maub. leaf spot	x	x	x	x	x		x
Ceratocystis paradoxa (Dade) C. Moreau (see Thielaviopsis paradoxa)	x						
Cercospora papayae Hans. leaf spot							x
C. spp.			x		x	x	
Colletotrichum gloeosporioides Pena. fruit rot						x	x
C. papayae P. Henn. fruit spoilage		x		x			
Fusarium vasinfectum Atk.	x						
F. spp.						x	x
Gloeosporium sp.	x						
Glomerella cingulata (Ston.) Spauld. & Schrenk anthracnose			x				
Meliola sp.	x						
Mycosphaerella caricae Syd. target spot						x	
(#) Oidium caricae Noack powdery mildew	x	x	x	x		x	x
Phytophthora cinnamoni Rands has been reported on this host in the West Indies and S.A. but no C.A. reports. Nicaragua does report a root rot requiring good drainage to control.							
P. palmivora Butl. fruit rot							x
P. sp.	x						
Pucciniopsis caricae Earle - See Asperisporium caricae							
Pythium aphanidermatum (Edson) Fitz. root rot							x
Sclerotium rolfsii Sacc. root rot							x
Thielaviopsis paradoxa (DeSeyn) Van Hohn - see Ceratocystis paradoxa (Also Endoconidiophora paradoxa (Deseynes) Davidson							
(#) Virus - Bunchy top and mosaic (cucumber)			x	x	x		
Stunting and mottling						x	

B2--Banana (Also Cavendish Banana)

Musa paradisiaca L.
Musa cavendishii Lamb.

Disease

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Ceratocystis paradoxa</i> (Dade) C. Moreau (but probably general) Blackhead. Usually reported as <i>Thielaviopsis paradoxa</i> , the conidial state or as <i>Endoconidiophora paradoxa</i> .			x				
<i>Cercospora musae</i> Zimm. - see <i>Mycosphaerella musicola</i>							
<i>Chaetothyria musarum</i> (Speg.) Th. plantain	x						
<i>Cordana musae</i> (Zimm.) Hoehn. leaf spot	x		x			x	x
<i>Diplodia theobromae</i> (Pat.) Nowell stem & fruit rot							x
<i>Fusarium oxysporium</i> Schl. var. <i>Cubense</i> (E.F. Sm.) Wr. wilt or "Panama" disease all Central America. Cavendish is resistant.							
<i>Gloeosporium musarum</i> Cke. & Mass. black end rot		x	x			x	
<i>Helminthosporium torulosum</i> (Syd.) Ashby fruit and leaf spot					x		x
<i>Memnoniella echinata</i> (Riv.) Gall.				x			
(#) <i>Mycosphaerella musicola</i> Leach leaf spot or "Sigatoka" disease	x	x	x	x	x	x	x
(#) <i>Pseudomonas solanacearum</i> (E.F. Sm.) E.F. Smith bacterial wilt or "Moko" disease		x	x	x	x	x	x
Serious on Mohoncho or Chata. See also <i>Heliconia</i> . See (<i>Xanthomonas solanacearum</i> (E.F. Sm.) Dowson)							
<i>Sclerotium rolfsii</i> Sacc. stem rot							x
<i>Stachylidium theobromae</i> Turc. "cigar end" tip rot	x		x			x	x
Virus: cucumber mosaic			x	x			
Roxana						x	
<i>Xanthomonas solanacearum</i> (E.F. Sm.) Dowson							
See <i>Pseudomonas solanacearum</i>							
<u>Wild Plantain or Heliconia - <i>Heliconia</i> spp.</u>							
<i>Meliola heliconiae</i> F.L. Stevens sooty mold - heavy infestation after white fly attack			x				x
<i>Pseudomonas solanacearum</i> (E.F. Sm.) "Moko" disease				x			
<i>Puccinia heliconiae</i> (Diet.) Arth. II & III rust		x					x

B3--Mango *Mangifera indica* L.

Disease

Calonectria rigidiuscula (Berk. & Br.) Sacc.
reported from adjacent South America but
no C.A. reports, but see Fusarium decem-
cellulare on cacao

Capnodium sp. sooty mold (probably C. Mangi-
ferum Cke. & Br.)

Cephaleuros virescens Kunze algal spot

Cercospora mangiferae Koord fruit drop

C. sp.

Colletotrichum gloeosporioides Penz - see
Glomerella cingulata

Elsinoe mangiferae Bitanc. & Jenkins spot
anthracnose

Erysiphe sp. mildew

(#) Glomerella cingulata (Ston.) Spauld. &
Schrenk anthracnose

Isaria sp.

Meliola mangiferae Earle black mildew (but
should be of general occurrence)

(#) Oidium mangiferae Berthet powdery mildew

O. sp.

Pestalotia mangiferae P. Henn. leaf spot

Phaeosphaerella virgatula Kleb. leaf spot

Phyllosticta mortoni Fairm. grey leaf spot

Phyllostictina mangiferae Batista & Vital

<u>English</u>	<u>Spanish</u>	<u>Scientific</u>
B4--Avocado	Aguacate	<u>Persea americana</u> Mill.

Agrobacterium tumefaciens (Sn. & Tow.) Conn.
Cephaleuros virescens Kunze algal spot
(#) Cercospora purpurea Cooke leaf spot
(#) Colletotrichum gloeosporioides Penz.
black fruit spot
Fusarium sp. root rot-maya
Gloeosporium magnoliae Pass.
Mycosphaerella persea Miles
Oidium spp.
Pellicularia koleroa Cke.
Phoma persicae Schulz & Sacc.
Phyllachora gratissima Rehm. black leaf spot
Phyllosticta spp. leaf spot
(#) Phytophthora cinnamomi Rands root rot

MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
X	X	X	X	X		X
X		X	X	X	X	X
X	X	X	X	X	X	X
X	X		X			
X		X			X	
X						
X						
X	X	X	X	X	X	X
X		X	X	X		X
X	X	X	X	X	X	X
X						
X	X	X	X		X	X
X	X	X	X			X

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Rhizoctonia spp. mal de talluelo	x	x	x	x	x	x	x
Rosellinia sp. root rot - maya						x	
Sclerotium rolfsii Sacc.			x				
Septoria sp.	x						
Sphaceloma perseae Jenkins scab	x	x	x	x	x	x	x
<div> <div>English</div> <div>Spanish</div> <div>Scientific</div> </div>							
B5--Coconut		Cocotero	Cocos nucifera L.				
Aphelenchoides cocophilus (Cobb) Goodey red ring disease nematode		x	x	x	x	x	x
Ceratocystis paradoxa (Dade) C. Moreau	x						
C. Radiocola (Bliss) Moreau	x						
Cytospora palmicola Berk. & Curt.	x						
Diplodia cococarpa Sacc. on husks			x		x		x
D. natalensis P. Evans - see D. theobroma below, this is a prior and probably better name							x
D. theobroma (Pat.) Nowell gummosis			x				
Endoconidiophora paradoxa (Deseynes) Davidson see Ceratocystis paradoxa							
Exosporium palmivorum Sacc. leaf spot			x		x		
Leptosphaeria sp. leaf tip			x				
Macrophoma cocos Pass.	x						
Pestalotia palmarum Cke. gray leaf spot	x						x
Phytophthora palmivora Butl. (P. faberi Maubl.)	x	x	x	x	x	x	x
(#) Virus - Yellow leaf, tapering stem wilt, bud rot suspected as a virus but associated with bacterial bud rot and beetle attack often after mechanical injury					x	x	x
<div> <div>English</div> <div>Spanish</div> <div>Scientific</div> </div>							
B6--Cherimoya		Annona	Annona cherimola Mill. - A. muricata L.				
Cephalosporium sp. target spot			x				
(#) Diplodia natalensis P. Evans fruit rot - should probably be called D. theobroma			x				x
D. theobroma (Pat.) Nowell							
Elsinoe annonae Bitanc. & Jenkins scab			x				

English B7--Pineapple	Spanish Pina	Scientific Ananas comosus (L.) Merr.	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Disease									
Ceratocystis paradoxa (Dade) C. Moreau leaf and fruit rot								x	
Colletotrichum sp.									x
Curvularia lunata (Wakk.) Boed.			x						
Endoconidiophora paradoxa (DeSeynes) (Dade) Davidson - see Ceratocystis paradoxa									
Fusarium sp.								x	
Penicillium sp.							x		
Phytophthora parasitica Dest. heart rot					x		x		x
B8--Lime (L) Citrus aurantifolia (Chr.) Swingle									
Sour orange (S) C. aurantium L.									
Lemon (Le) C. limon (L.) Burm. f.									
Tangerine (T) C. nobilis Lour.									
Grapefruit (G) C. paradisi Macf.									
Sweet orange (O) C. sinensis (L.) Osbeck									
When the species is not indicated it was undesignated. There were no specific records for Pumelo, C. grandis (L.) Osbeck.									
Alternaria citri Ell. & Pierce black rot (Le) (O)			x				x		
Armillaria sp. root rot								x	
Aschersonia aleyrodis Webber red leaf mold on scale and white fly larvae				x					x
Aspergillus sp. fruit rot									x
Capnodium citri Berk & Desm. sooty mold (O) (L)			x x x	x	x	x	x	x	x
Cephaleuros virescens Kunze algal spot									x
Cephalosporium omnivorum Crandall dieback (O)					x				
Cercospora sp. greasy spot (L)						x			
Chaetothrium sp. (O)			x						
Cladosporium sp. (O) (L)			x x						
C. citri Mass. - see Elsinoe Fawcetti									
Clitocybe tabescens (Scop. ex Fr.) Bres. root rot									x

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>Coniothecium Scabrum</i> McAlp (O)	x						
<i>C. citri</i> McAlp (L)	x						
<i>Coniothyrium olivaceum</i> Bon. (L)	x						
<i>Conniella diplodiella</i> (Speg.) Petr. & Syd. fruit (L)	x						
<i>Corticium Salmonicolor</i> Berk. & Br. pink disease	x	x	x	x	x	x	x
<i>C. sp.</i> (L)	x						
(O)	x	x	x				x
<i>Dematophora necatrix</i> R. Hart (L)	x						
<i>Diaporthe citri</i> Wolf melanose (O)	x					x	x
(#) <i>Diplodia natalensis</i> P. Evans dieback (O) Probably <i>D. theobroma</i> (Pat.) Nowell is a better name			x			x	
(O) Probably <i>D. theobroma</i> (Pat.) Nowell			x				
<i>D. Theobroma</i> (Pat.) Nowell	x						
<i>D. sp.</i> (O) - see also <i>Sphaeropsis</i>	x						
<i>Elsinoe fawcetti</i> Bitanc. & Jenkins scab (S) (L)	x	x	x	x	x	x	x
(T)		x		x			
(Le)		x		x	x		
(O)	x		x		x		
(G)		x					x
<i>Ersiphe sp.</i> mildew		x					
<i>Fusarium lateritium</i> Nees. var <i>longum</i> Wr. (a coffee and citrus parasite in Africa) reported from soil only						x	x
<i>Fusisporium limoni</i> Br. (O)	x						
<i>Fumago vagans</i> Fr. sooty mold (O)					x		
<i>Ganoderma fornicatum</i> Speg. rot	x	x					
<i>Gloeosporium psidii</i> Del. (L)	x						
(O)	x						
<i>G. limetticola</i> Clausen reported from S.A & West Indies but no C.A. reports							
<i>Glomerella cingulata</i> (Ston.) Spauld & Schrenk anthracnose (<i>Colletotrichum</i> <i>gloeosporioides</i> Penz.)	x	x	x	x	x	x	x
(L)	x						
(Le)					x		
(O)	x	x	x				x
(G)					x		
<i>Meliola camelliae</i> (Catt.) Sacc. - see <i>Capnodium</i>							
<i>Mycosphaerella citrullina</i> (C.O. Sm.) Gross leaf spot						x	

Disease

	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
M. horii Hara					x		x
M. sp.			x				
Myriangium duriae Mont. & Berk. (O)	x						
Nectria galligena Bres.	x						
Oidium tingitanum Carter powdery mildew	x					x	x
O. sp.				x			
Omphalia flavida (Cke.) Maubl. leaf spot reported from the West Indies but no C.A. reports.							
Penicillium digitatum Sacc. green mold	x		x			x	x
P. italicum Wehmer blue mold	x		x			x	x
Phoma limonii Thuem. (L)	x						
Phomopsis citri Fawc. - see Diaporthe citri							
Phyllosticta citricola Horik		x					
Phytophthora cinnamomi Rands (root rot) has been reported on citrus in Brazil and the U.S., is widely distributed in C.A., but has not been reported							
P. citrophthora (R.E. & E.H. Sm.) Leonian collar rot (O)	x	x	x			x	x
(#) P. parasitica Dast. gummosis (O) - causes serious losses because of poor planting or budding techniques	x	x	x	x	x	x	x
P. palmivora Butl. stem blight				x		x	
Podonectria coccicola (Ell. & Ev.) Petch on scale							x
Polyporus annosus F.	x						
P. hispidus (Bull.) Fr.	x						
Pseudomonas syringae Van Hall black pit	x	x					
Rhizoctonia solani Kuehn damping off	x	x	x	x	x	x	x
Rosellinia sp.	x					x	
Sclerotium rolfsii Sacc.							x
Septobasidium curtisii (Berk & Desm.) Boed. & Steirm. felt			x		x		
S. Pedicellatum Pat. felt (O)	x						
S. pseudopedicellatum Burt. felt	x	x	x			x	x
Septoria citri Pass. (Le)							x
Sphaeropsis henriquesii Thuem. fruit (L) (O)	x						
Sphaerostilbe auranticola B. & Br. rosy fungus or red root disease (L) (may be secondary)	x		x				x
Xanthomonas citri (Hasse) Dowson bacterial canker	x						

Disease			MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Virus Psorosis or scaly bark (0)				x				x	x
PART "C" - VEGETABLE CROPS									
<u>English</u>	<u>Spanish</u>	<u>Scientific</u>							
Cl-- Tomato	Tomate	Lycopersicum esculentum Mill.							
Agrobacterium tumefaciens (Sm. & Tow.) Conn.			x						
(#) Alternaria solani (Ell. & G. Martin)									
Sor. early blight in colder areas			x	x	x	x	x	x	x
A. tomato Cke. nailhead spot					x				x
Ascochyta lycopersici (Flowr.) Brun. leaf spot			x						
Aspergillus sp.			x						
Cercospora diffusa Ell. & Ev.			x						
C. physalidis Ell. & Ev.			x						
(#) Cladosporium fulvum Cke. leaf mold in the hotter more humid areas (resistant vari- ties are available)			x	x	x	x	x	x	x
Colletotrichum lycopersici Chester stem rot			x						
C. phomoides (Sacc.) Chester fruit rot				x	x			x	
Corynebacterium michiganense (E.F. Sm.)									
H.L. Jensen bacterial canker			x					x	x
Corynespora cassicola (Berk. & Curt.) Wei			x	x					
Erwinia carotovora (L.R. Jones) Holland soft rot			x						x
Fusarium oxysporium Schlecht. f. lycopersici Sacc. wilt			x	x	x		x	x	x
F. sp. fruit mold						x			
Geotrichum candidum Lk.			x						
Gloeosporium phomoides Sacc.			x						
Glomerella rufomaculans (Berk.) S. & S.			x						
Gonatobotrys simplex Cda.			x						
Helminthosporium carposaprum F. Pollack									x
Myrothecium roridum Fr.			x						
Nematospora coryli Pegl. (N. lycopersici Schneider) fruit spot			x						
Oidium sp.								x	
Phoma destructiva Flowr. fruit spot								x	x
P. Vexans Sacc. & Syd. (Phomopsis vexans) (Sacc. & Syd.) Harter			x						
(#) Phytophthora infestans (Mont.) de B. late blight in cold areas			x	x	x	x	x	x	x

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
P. mexicana Hotsun & Hartig mildew on fruit	x						
P. parasitica Dast. fruit rot			x				
(#) Pseudomonas solanacearum (E.F.Sm.) bacterial wilt	x	x	x	x		x	x
Pythium aphanidermatum (Edson) Fitz. damping off							x
P. spp. damping off and fruit rot				x			x
Rhizoctonia solani Kuehn soil rot	x	x	x			x	x
R. sp.							x
Sclerotinia sclerotiorum (Lib.) de B. stem & fruit rot			x				
Sclerotium rolfsii Sacc. root rot	x					x	x
Septoria lycopersici Speg. leaf spot	x	x	x		x	x	x
Stemphylium solani Weber gray leaf spot				x			
Xanthomonas solanacearum (E.F. Sm.) Dowson see pseudomonas solanacearum							
X. vesicatoria (Doidge) Dowson bacterial spot	x						
(#) Virus - mostly imperfectly identified:							
Purple leaf roll	x	x	x			x	x
Mosaic		x	x	x	x		
Fern leaf						x	
Curly top						x	
Arrugamiento							x
Yellows							x
Root knot nematodes are seriously damaging this crop.							
<div> <div>English</div> <div>C2-- Carrot</div> </div> <div> <div>Spanish</div> <div>Zanahoria</div> </div> <div> <div>Scientific</div> <div>Daucus carota L. var. sativa DC</div> </div>							
(#) Alternaria dauci (Kuehn) Groves & Skolko (Macrosporium carotae Ell & Langl. leaf blight in wet areas		x	x	x	x	x	x
(#) Cercospora carotae (Pass.) Solh. leaf blight in cold areas	x	x	x				x
Erwinia carotovora (L.R. Jones) Holland soft rot			x	x	x	x	x
Fusarium sp.	x						
Rhizoctonia solani Kuehn	x		x		x		
Rhizopus sp.	x						
Sclerotium rolfsii Sacc				x			
Nematodes are a problem on this crop							

English C3--Cabbage etc.	Spanish Col	Scientific Brassica oleraceai L. var capitata L.	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Disease									
Albugo candida (Pers. ex Chev.) Kuntze white rust on Raphanus sativus						x			x
(#) Alternaria brassicae (Berk.) Sacc. (A. herculea (Ell. & Martin) J.A. Elliott) gray leaf spot. Also Nicaragua on turnip and Chinese cabbage			x	x	x	x	x	x	x
A. oleraceae Milbrath (A. brassicicola (Schw.) Wiltsh. black spot								x	x
Bacillus campestris Pammel - see Xanthomonas campestris									
Erwinia carotovora (L.R. Jones) Holland								x	x
Ersiphe polygoni DC powdery mildew								x	
Fusarium oxysporium Schlecht f. conglutinans (Wr.) Sn. & Hn. yellows					x			x	x
Mycosphaerella brassicicola (Fr. ex Duby) Lindau			x						x
Peronospora parasitica (Pers.) ex Fr. downy mildew				x				x	x
(#) Phoma lingam (Tode ex Fr.) Desm. "pata prieta" blackleg					x			x	x
Plasmodiophora brassica Wor. club root			x						
Pseudomonas maculicola (McCul.) F.L. Stev. leaf spot					x				
Pythium spp.				x	x	x	x	x	x
Rhizoctonia solani Kuhn damping off and bottom rot				x	x	x	x	x	x
Sclerotinia sclerotiorum (Lib.) D. By. soft rot								x	x
(#) Xanthomonas campestris (Pam.) Dowson black rot				x	x	x	x	x	x
English C4-- Pepper	Spanish Chile	Scientific Capsicum frutescens L							
Alternaria sp. leaf and fruit spot			x		x	x			x
Botrytis cinerea Pers.			x	x	x	x	x	x	x
(#) Cercospora capsici Heald & Wolf leaf and fruit in wet seasons			x	x	x	x	x	x	x
C. diffusa El. & Ev. leaf spot					x				
C. melongenae Welles								x	
C. Unamunoi Cast.									x
(#) Colletotrichum nigrum Ell. & Hols. anthracnose			x	x	x	x	x	x	x
C. phomoides Sacc.					x				

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
C. piperatum (Ell. & Ev.) Ell. & Hale						x	
Curvularia lunata (Wakker) Boed. fruit spot	x						x
Erwinia caratovora (Jones) Holland						x	x
Fusarium annuum Leonian	x	x	x	x	x	x	
F. sp. wilt and fruit rot		x					x
Gloeosporium piperatum El. & Ev. anthracnose		x					x
Meliola capsicola F. L. Stevens	x						
Peronospora tabaciana Adam.			x				
Phoma destructiva Plowr. fruit rot	x						x
Phomopsis capsici (Magnaghi) Sacc.	x						
Phytophthora cactorum (Leb. & Coh.) Schoret			x				
P. capsici Leonian	x	x	x			x	
P. infestans (Mont.) D. By.	x	x	x	x	x	x	x
Puccinia paulensis Rangel		x					
Pythium aphanidermatum (Edson) Fitz. white mold							x
Rhizoctonia solani Kuehn			x			x	
Sclerotium rolfsii Sacc.						x	x
Stemphylium floridanum Hannan & Weber						x	
Xanthomonas solanaceara E. F. Sm.	x	x	x	x	x	x	x
X. vesicatoria (Doidge) Dowson	x			x	x	x	
(#) Virus - In all C.A. areas: mosaic, curl, crinkle, shoestring, bunchy-top, purple leaf - not well identified or separated							
<u>English</u> C5-- Onion		<u>Spanish</u> Cebolla	<u>Scientific</u> Allium cepa L.				
(#) Alternaria porri (Ell.) Cif. purple blotch - serious in wet weather	x	x	x	x	x	x	x
(#) Aspergillus niger v. Tiegh. black rot - especially important as a market disease		x	x	x	x	x	x
Botrytis allii Munn. grey mold						x	x
Colletotrichum circinans (Berk.) Vogl. spot						x	x
Erwinia carotovora (L. R. Jones) Holland soft rot					x	x	x
Fusarium oxysporium Schlecht (as Sn. & Hn.) or perhaps as most were listed F. oxysporium f. cepae (Hanz.) Sn. & Sn. basal bulb rot	x	x	x	x	x	x	x
F. Mali Taub. pink root					x		x
Macrosporium parasiticum Thuem. - see Stemphylium botryosum							

Disease			MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Penicillium spp. blue mold in storage				x	x	x	x	x	x
Peronospora destructor (Berk.) Casp. downy mildew			x	x	x			x	x
P. schleideni Ung.			x	x	x	x	x	x	x
Phyllosticta allii Tehon & Daniels leaf spot							x		
Pythium sp.									x
Rhizoctonia solani kuehn damping off							x	x	
R. sp.									x
Sclerotium cepivorum Berk. white rot - no C. A. reports on onion but reported from Panama on A. sativum (ajo) from Italy									
Stemphylium botryosum wallr. with purple blotch				x					
Urocystis cepulae Frost. smut			x						
Root knot nematodes are general, Ditylenchus dipsaci (Kuehn) Filip. the bulb nematode on A. sativum (garlic)			x						
<u>English</u> C6-- Pea	<u>Spanish</u> Arveja Guisante	<u>Scientific</u> Pisum sativum L.							
Ascochyta pisi Lib. leaf and pod spot			x					x	
Colletotrichum pisi Pat. anthracnose				x					
C. dematium (Fr.) Grove f. truncata (Schw.) Arx.			x						
Ersiphe polygoni DC powdery mildew in cold areas			x	x	x	x			
Mycosphaerella pinodes (Berk.) Blox. Vest. blight			x		x				
Rhizoctonia solani Kuehn root rot					x				

Disease			MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
C7--Muskmelon	(M)	Cucumis melo L.							
Cantaloup	"	C. melo L. var. reticulatus Naud.							
Honey Dew	"	C. melo L. var. inodorus Naud.							
Cucumber	(C)	Cucumis sativus L.							
Squash	(S)	Cucurbita maxima Dcne							
Calabacita	"	C. pepo							
Watermelon	(W)	Citrullus vulgaris Schrad.							
Guisquil - Chayote	(G)	Sechium edule (Jacq.) SW.							
Alternaria cucumerina (Ell. & Ev.) J. A. Elliott (A. cucurbitae Letendre & Roum) fruit rot (M)					X				
Ascochyta cucumis Fautr. & Roum			X						
Cercospora citrullina Cke. leaf spot (W) (G)						X			X
C. sechii Stevenson (G)									X
Cladosporium cucumerium Ell. & Arth. fruit rot (M) (C) (G)									X
(#-X) Colletotrichum lagenarium (Pass.) Ell. & Halst. anthracnose foliage and fruit (M) (C) (S) (W) (G)			X			X	X	X	X
Corticium microsclerotia (Matz) Webber web blight (C)					X				
Curvularia lunata (Wakk.) Boed. (C)			X						
(#) Erysiphe cichoracearum DC powdery mildew dry season (M) (C) (S) (W) (G)			X	X	X	X	X	X	X
E. communis Waller ex Fr. (S)			X						
Erwinia tracheiphila (E.F. Sm.) Holland bacterial wilt (C)						X			
Fusarium oxysporium Schlecht. f. niveum (E.F. Sm.) Sn. & Hn. (M) (W)			X		X		X		X

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
F. sp. (W)				X			
Helminthosporium cucumerinum Garbowski (C)	X						
(#) Mycosphaerella citrullina (C.O. Sm.)							
Gross gummy stem blight (M)	X		X		X		
(W)	X		X	X	X		X
Peronospora parasitica (Pers.) de Bary (W)			X		X		
Phyllosticta cucurbitacearum Sacc.							
leaf spot (C)							X
P. sechii E. Young (G)							X
Physalospora Rhodina (Berk. & Curt.) Cke. (W)							X
Phytophthora capsici Leonian (W)	X						
Plasmopara cubensis (B. & C.) J. E. Humprey							
(M)	X						
(C)	X						
Pseudomonas lachrymans (E. F. Sm. & Bryan)							
Carsner angular leaf spot (M)					X		
(C)					X		X
(#) Pseudoperonospora cubensis (Berk. & Curt.)							
Rostow downy mildew (M)	X		X		X		X
(C)		X	X	X	X		X
(S)				X	X		X
(W)	X	X	X	X	X		X
Pythium aphanidermatum (Edson) Fitz. (C)							X
(S)	X						
P. sp. (W)				X			
Rhizoctonia solani Kuehn soil rot (C)					X		X
(S)				X			
(W)				X			
Sclerotium rolfsii Sacc. (M)							X
(C)							X
(S)							X
(W)							X
Septoria curcurbitacearum Sacc. (G)	X						
Sphaerotheca humuli (DC) Burr. (M)					X		
Verticillium albo-atrum Reinke & Berth (M)			X				
(#) Virus: Curly top (M)			X	X	X	X	
Mosaic (M)			X	X	X	X	X
Mosaic (C)			X		X	X	X
Mosaic (S)		X		X			X
Mosaic (W)			X				
Ring spot (M)			X	X	X	X	
Ring spot (W)	X						
Mottle & stunt (C)					X		
Mottle & stunt (S)							

<u>English</u> C8-- Beet	<u>Spanish</u> Remolacha	<u>Scientific</u> Beta vulgaris L.		MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Disease										
Cercospora beticola Sacc. leaf spot - natural infections have been reported (not in C.A.) on lamb's quarters - Chenopodium					x	x	x	x	x	x
Rhizoctonia solani Kuehn crown rot				x		x			x	x
Root knot nematodes are common										
<u>English</u> C9--Cassava	<u>Spanish</u> Yuca	<u>Scientific</u> Manihot esculenta Crantz								
Bacillus manihotis Arhau-Berthet - see Xanthomonas manihotis										
Cercospora caricae Chupp. & Cif.								x		
C. caribaea Chupp & Cif.					x			x		x
C. henningsii Allesch. (C. cassavae El. & Ev.)						x	x	x	x	x
Gloeosporium sp. (G. manihotis P. Henn) "Babilla"										x
Periconia pycnospora Fres. leaf spot										x
Phytophthora sp.										x
Rhizoctonia solani Kuehn root rot										x
Rhizopus nigricans Ehr. soft rot						x				
Sclerotium rolfsii Sacc. collar rot						x				
Uromyces janiphae (Wint.) Sacc. O-I-II-III rust									x	x
U. striatus Schroeter						x				
Xanthomonas alfalfae (Riker et al) Dowson						x				
X. manihotis (Arhau-Berthet) Starr										x
Virus - Mosaic										x
Unknown cause root rot									x	
Root knot nematodes										
<u>Spanish</u> C10--Malanga	<u>Scientific</u> Xanthosoma violaceum Schott & spp.									
Alternaria tenuis Nees leaf spot										x
Superbrotamiento - cause unknown				x						

<u>English</u> C11--Lettuce	<u>Spanish</u> Lechuga	<u>Scientific</u> Lactuca sativa L.	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Disease									
Alternaria sonchi Davis									X
Bremia lactucae Regel downy mildew in cold areas			X	X					X
Cercospora longissima (Trav.) Sacc. (Belize)				X		X			X
Erwinia caratovora (Jones) Holland						X		X	
Fusarium sp. damping off									X
Pythium sp. damping off									X
Rhizoctonia sp. damping off									X
Septoria lactucae Pass			X	X		X			X
Sclerotinia sclerotium (Lib.) D By.				X		X		X	
 <u>English</u> <u>Spanish</u> <u>Scientific</u> C12--Sweetpotato Camote Ipomoea batatas (L.) Lam.									
Actinomyces scabies (Thax.) Gussow (Streptomyces) soil rot--probably secondary			X						
Albugo ipomoeae-panduratae (Schw.) Swing. white rust				X		X			X
Alternaria porri (Ell.) Cif. purple spot									X
A. sp.			X					X	
Ceratocystis fimbriata (Ell. & Halst.) Hunt			X					X	X
Cercospora sp.								X	
Choanephora cucurbitarum (Berk. & Rav.) Thaxt. leaf mold									X
Coleosporium ipomoeae (Schw.) Burr. II & III rust			X						
Colletotrichum circinans (Berk.) Vogl.									X
C. Gloeosporioides Penz.							X		X
Diplodia theobroma (Pat.) Nowell (D. tubercicola (Ell. & Ev.) Taub.			X						
Elsinoe batatas Viegas & Jenkins (on I. intrapilosa			X						
Endoconidiophora fimbriata (Ell. & Halst.) Davidson - see Ceratocystis fimbriata									
Macrophomina phaseoli (Maub.) Ashby			X						X
M. phaseolina (Tassi) Gold.			X						
Meliola clavulata Wint. black mildew			X						
Phyllosticta batatas (Thuem.) Cke.				X			X	X	X
Rhizopus nigricans Ehr. soft rot			X	X		X		X	
Sclerotium rolfsii Sacc.									X
S. bataticola Taub. - see Macrophomina phaseoli									

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Stemphylium sp.						X	
Virus - mosaic						X	
PART "D" - CASH CROPS							
<u>English</u> DL-- Coffee							
<u>Spanish</u> Cafe							
<u>Scientific</u> Coffee arabica L.							
Armillaria mellea Vahl.	X	X					
Capnodium coffeae Pat.	X	X	X	X	X	X	X
Cephalosporium deformans Crandall dieback			X				
C. Omnivorium Crandall			X				
C. zonatum Sawada						X	
Ceratocystis fimbriata (Ell. & Halst) Hunt canker		X	X		X	X	X
Cercospora coffeicola Berk. & Cooke mancha de hierro	X	X	X	X	X	X	X
Chaetostroma sp.	X						
Colletotrichum coffeanum Noack. anthracnose	X	X	X	X	X	X	X
Corticium salmonicolor Ber. & Br. pink disease	X	X	X	X	X	X	X
Fusarium coffeicola P. Henn. leaf spot			X				
F. lateritium Nees (conidial stage of Gib- berella baccata (Wallr.) Sacc. twig blight			X				
F. lateritium Nees. var. longum Wr. (a coffee & citrus parasite in Africa) reported from soil only						X	X
F. Oxisporium Alv. & Well. root rot	X	X	X			X	
F. spp.						X	X
Helicobasidium compactum Boed. felt & root rot		X	X				
Helminthosporium sp.					X		
Hendersonia coffeae Del.	X						
Leptosphaeria coffeigena (Berk. & Curt.) Sacc.	X						
Microthyrium laurenti P. Henn.	X						
Mycosphaerella coffeicola (Stevenson & Wellman) Cke. leaf spot	X		X				
Myrothecium roridum Tode ex Fr. stem girdle		X				X	
Nectria dodgeii Heiser cherry decay			X				
N. sp.	X	X	X			X	
Omphalia flavida (Cke.) Maubl. & Rangel ojo de gallo - all C.A.							

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Pellicularia koleroga Cke. thread blight - all C.A.							
Pestalotia coffeae Zimm.	x						
Phoma costarisensis Echandi blight in cold areas		x				x	
Phyllosticta coffeicola Delacr.						x	x
P. spp.		x	x			x	x
Phytophthora sp. damping off							x
Pythium sp. damping off		x					
Rosellinia bunodes (Berk. & Br.) Sacc. - a secondary root rot organism "maya", all C. A.							
Rhizoctonia chousii Crandall black root rot			x				
R. solani Kuehn damping off - all C.A.							
R. sp. root rot						x	
Sclerotium coffeicolum Stahl. - On C. liberica in nature, C. arabica & robusta by inoculation						x	
Virus: unidentified						x	
Mancha mantecosa (eradicated)			x			x	
Tallo engrosamiento or "bottling"		x					
<div> <div>English</div> <div>D2-- Cotton</div> </div> <div> <div>Spanish</div> <div>Algodon</div> </div> <div> <div>Scientific</div> <div>Gossypium hirsutum L.</div> </div>							
Alternaria gossypii (Jacz.) Nisikado - see A. tenuis Auct.							
A. macrospora Zimm. leaf blight and boll rot	x	x	x	x	x	x	
A. tenuis Auct. boll rot		x					
Arthrobotrys superba Cda. fiber deterioration							x
Ascochyta gossypii Woron. blight & boll rot	x	x					
Aspergillus niger v. Tiegh. black boll rot						x	
Cercospora althaeina Sacc. leaf spot	x						
C. gossypina Cke. - see Mycosphaerella gossypina							
Colletotrichum gossypii Southworth - see Glomerella							
Cunninghamella echinulata Thaxt. fiber deterioration							x
Curvularia lunata (Wakk.) Boed fiber deterioration							x
Diplodia gossypina Cke. boll rot	x	x	x		x		x

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
<i>D. natalensis</i> P. Evans boll rot	x	x	x		x		x
<i>Fumago vagans</i> Fr. sooty mold					x		
<i>Fusarium moniliforme</i> Sheldon boll rots & blight					x		
<i>F. oxysporium</i> Schlecht	x				x		
<i>F. roseum</i> Lk.			x		x		
<i>F. solani</i> (Mart.) Appel & Wr.					x		
<i>F. vasinfectum</i> Atk. wilt	x		x		x		
<i>Glomerella gossypii</i> Edg. anthracnose & pink boll rot -	x	x	x	x	x	x	
and probably as <i>G. gloeosporoides</i>							x
<i>Kuehneola gossypii</i> (Lagerh.) Arth.		x					
<i>Monilia crassa</i> Shear & Dodge fiber deterioration							x
<i>M. sitophila</i> (Mont.) Sacc. fiber deterioration							x
<i>Mycosphaerella areola</i> Ehr. & Wolf frosty blight			x		x		
<i>M. gossypina</i> (Atk.) Earle leaf spot	x			x		x	x
<i>Nigrospora sphaerica</i> (Sacc.) Mason seed & fiber mold							x
<i>Phragmidium</i> sp.	x						
<i>Phyllosticta gossypina</i> Ell. & G. Martin leaf spot	x						
<i>Phymatotrichum omnivorum</i> (Shear) Dug. root rot	x						
<i>Physalospora rhodina</i> (Berk. & Curt.) Cke. is probably the boll rot of <i>Diplodia gossypina</i> already reported			x				x
<i>Puccinia cacabata</i> Arth. & Holw. rust	x						
<i>P. schedonnardi</i> Keller & Sw.	x						
<i>P. stakmanii</i> Presley 0 & I rust (II & III on <i>Bouteloua</i>)	x						
<i>Pythium</i> spp. damping off					x		x
<i>Rhizoctonia microsclerotia</i> Matz. web blight			x		x	x	
<i>R. solani</i> Kuehn damping off and leaf blight	x	x	x		x	x	
<i>R. sp.</i>							x
<i>Sclerotium rolfsii</i> Sacc.			x				
<i>S. sp.</i>							x
<i>Septocylindrium areola</i> (Atk.) B & C. defoliation				x			
<i>Stachybotrys atra</i> Cda. fiber deterioration							x
<i>Verticillium albo-atrum</i> Reinke & Berth wilt	x	x			x		
<i>Xanthomonas malvacearum</i> (E.F. Sm.) Dowson angular leaf spot	x		x	x	x	x	x

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Nematodes are general							
Virus: Mosaic			x		x		
Crinckle leaf & leaf curl (probably white fly transmitted)		x	x				
<u>English</u> D3--Cacao							
<u>Scientific</u> Theobroma cacao L.							
Armillaria mellea Vahl. root rot	x						
Calonectria crenea Zimm.	x						
C. flavida Masse	x						
C. rigidiuscula (Berk. & Br.) Sacc. - see also Fusarium decemcellulare Brick. This is the perfect stage							
Cephaleuros virescens Kze. algal spot		x	x			x	x
Ceratocystis fimbriata (Ell. & Halst.) Hunt canker		x				x	
Colletotrichum gloeosporiodes Penz. anthracnose		x				x	x
C. Luxificum H. & D.	x						
C. spp.	x		x	x	x		
Corticium salmonicolor Ber. & Br. pink disease		x			x	x	x
Diplodia cacaoicola Henn.	x						
D. theobroma (Pat.) Nowell pod rot		x	x		x	x	x
Fusarium decemcellulare Brick - associated with, or causing, or with a virus causing flower gall/cushion gall/green point gall (Beleze)		x					
F. roseum Lk. - also associated with cushion gall. A doubtful pathogen					x	x	x
Lasioidiplodia theobromae (Pat.) Greff. & Maubl.					x		
Macrophoma vestita Prill & Delac.	x						
Marasmius perniciosus Stahl. reported from adjacent S.A. and West Indies but no C.A. reports	x						
M. semiustus Berk & Curt. (M. stenophyllus Mont.)							
M. trichorigus Speg.							
Menispora acicola Ell & Ev. on pod	x						
M. ciliata Cda. on pod	x						
Monolia roreii Cif. & Par. pod rot							x
Nectria theobromae Massee	x						

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
N. sp.						x	
Pellicularia koleroga Cke. threat blight	x	x			x	x	x
Phytophthora palmivora Butl. (P. faberi Maubl.) black pod rot	x	x	x	x	x	x	x
Rosellinia paraguayensis Starb. root rot	x						x
R. sp.							x
Rhizoctonia sp./spp. root rot	x	x	x	x	x	x	x
<div> <u>English</u> D4-- Yam </div> <div> <u>Spanish</u> Name </div> <div> <u>Scientific</u> Dioscorea alata L./ spp. </div>							
Aspergillus sp. flower mold							x
Cercospora abelmoschi Ell & Ev. leaf spot							x
C. carbonaceae Miles							x
C. ubi Raceborski leaf blotch							x
Diaporthe batatitidis Harter & Field			x				
Diplodia theobromae (Pat.) Nowell root rot							x
Fusarium oxysporium Schlecht							x
Phyllachora ulei Wint. black leaf spot							x
Rhizoctonia microsclerotia Matz target spot			x				
Sphenospora pallida (Wint.) Diet. rust							x
Uredo dioscoreicola Kern, Cif. & Thurston							
rust in the West Indies but no C.A. reports							
Nematode problems are reported							
<div> <u>English</u> D5--Rubber </div> <div> <u>Spanish</u> Hule </div> <div> <u>Scientific</u> Hevea brasiliensis Muell-Arg. </div>							
Alternaria sp. leaf spot	x						
Ascochyta hevea Petch.						x	
Cephaleuros virescens Kunze algal spot	x						x
Ceratocystis fimbriata (Ell. & Halst.) Hunt	x						
Cercospora heveae Vincens overgrowing							
Phyllachora sports						x	
Colletotrichum gloeosporioides Penz. - see Glomerella							
Corticium salmonicolor Berk. & Br. pink disease	x	x				x	
Diaporthe hevea Petch. dead branches				x			
Didymella sp. leaf spot	x						

Disease	MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
Diplodia sp. tapping panel mold	x						
D. theobromae (Pat.) Nowell - see Physalospora							
Dothidella ulei P. Henn. SALD (South American leaf disease)	x	x		x	x	x	x
Endoconidiophora fimbriata (Ell. & Halst.) Davidson tapping panel mold - see Ceratocystis	x						
Fomes lignosus (Klotzsch) Bres.	x					x	
Fusarium sp. panel mold	x						
Gloeosporium heveae Petch - see Glomerella							
G. alborubrum Petch - See Glomerella							
Glomerella cingulata (Stone) Spauld. & Schrenk dieback	x					x	
Helicobasidium compactum Boed. root rot-felt	x	x					
Helminthosporium heveae Petch birds eye spot	x			x	x	x	x
Periconia heveae Stevenson & Imle leaf spot	x					x	
Phyllachora huberi P. Henn. tar spot						x	
Phyllosticta sp. leaf spot	x						
Physalospora rhodina (Berk. & Curt.) Cke. dieback				x		x	
Phytophthora palmivora Butler trunk canker	x					x	
Polyporus lignosus Klotzsch - see Fomes lignosus	x						
<div> <div>English</div> <div>Scientific</div> </div>							
D6--Lemon Grass - Cymbopogon citratus (DC) Stapf							
Helminthosporium sacchari (B de H.) Butler		x					
Toxic exudate-Spittle bug		x					

El--Alfalfa - Medicago sativa L.

Asterocystis radialis d. Wild
Bacterium alfalfae Riker - see Xanthomonas
alfalfae
Cercospora helvola Sacc.
C. medicaginis Ell. & Ev. leaf loss
C. zebrina Pass.
Colletotrichum dematium (Fr.) Grove anthrac-
nose
C. graminicola (Ces.) G. H. Wils.
C. trifolii Bain
Erysiphe polygoni DC ex Merat.
Peronospora trifoliorum de B. downy mildew
Pseudopeziza jonesii Mannf.
P. medicaginis (Lib.) Sacc.
Pseudopeziza trifolii (E. Rostr.) Petr. grey
leaf spot
Rhizoctonia violaceae Tul. - note:
Helicobasidium compactum Boed. has been
reported on rubber
R. solani Kuehn collar rot
Sclerotinia trifoliorum Ericks
Sclerotium rolfsii Sacc.
Uromyces striatus Schoet. (U. medicaginis
(Pass.) D Ba. and var. Medicaginis - an
important rust in dry seasons
Urophlyctis alfalfae Mag.
Xanthomonas alfalfae (Riker, Jones, Davis)
Dowson

Helminthosporium cynodontis marig.
leaf blight
H. giganteum Heald & Wolf eye spot
(wheat)
Piricularia grisea (Cke.) Sacc.
Puccinia cynodontis Lacr. ex Desm. II & III
rust - The O & I stage are reported on
Plantago in Europe & Japan -- no report in
this hemisphere
Rootknot and root nematodes reported

[illegible]

E3--Pangola Grass - Digitaria decumbens Stent

Disease

Capnodium sp. - following white fly attack
reduces grazing value
Helminthosporium sp.
Mycosphaerella maydis (Pass.) Lind.
Piricularia grisea (Cke.) Sacc. - this may be
the agent for the occasional total failures
of this grass reported. A virus disease
is suspect in S.A.
Deficiency-Boron
Toxic exudate-Spittle bug

E4--Guatemala Grass - Tripsacum laxum Nash

Puccinia polysora Underw.

E5--Guinea Grass - Panicum maximum Jacq.

Cercospora fusimaculans Atk. leaf spot
Cerebella andropogonis Ces. false smut
Claviceps purpurea (Fr.) Tul. ergot reported
in the West Indies but no C.A. report.
Colletotrichum graminicola (Ces.) G. W. Wils.
anthracnose
Helminthosporium sativum P.K.B. leaf spot
H. sp.
Lacellina graminicola Sacc.

E6--Para Grass - Panicum purpurascens Raddi.

Marasmius sacchari Wakk. - in West Indies but
no C.A. report
Nigrospora oryzae (Berk. & Br.) Petch in West
Indies but no C.A. report of leaf mold.
Uromyces leptodermus Syd. II & III rust

E7--Imperial Grass - Axonopus scoparius
(Fluegge) Hitch.

Xanthomonas axonopodis Starr & Garces
gummosis - severe losses (75%) in adjacent
S.A. but no C.A. report

MEXICO	GUATEMALA	EL SALVADOR	HONDURAS	NICARAGUA	COSTA RICA	PANAMA
		x		x		
		x	x	x	x	x
			x			
		x		x		x
			x			x
x				x		
x						
		x				
						x

SUMMARY OF LOSS LEADERS FROM CHECKLIST OF DISEASES OF
CENTRAL AMERICAN ECONOMICALLY IMPORTANT CROPS

Part A - Food Crops

1. Indian Corn - Maiz - Zea mays L. Estimated yield reduction
20-40%.

Diplodia zeae (Schw.) Lev. and *Gibberella zeae* (Schw.) Petch, ear rots. These two ear rots regularly, depending on the environmental condition of the moment, cause 5-10% loss. Especially serious when corn is in poor condition.

Helminthosporium turcicum Pass., leaf blight. Bad on hybrid corns, not a direct cause of losses but is one of the factors contributing to effects of other diseases.

Puccinia sorghi Schw., II and III rust and *P. polysora* Underw., II and III tropical rust. These two rusts regularly cause 5-10% losses, are very bad on hybrid material and may cause losses reaching 80%.

Virus - stunt or achaparramiento and probably Dwarf corn mosaic. The leading cause of loss of the corn crop today. Regular losses of 10-20% are experienced and 100% losses are reported, from time to time.

2. Beans - Frijol - Phaseolus vulgaris L. Estimated yield reduction
50%.

Chaetoseptoria welimanii Stevenson, grey leaf spot. Today is causing 1-2% loss but technicians agree it is increasing, especially on bush types. New varieties will probably be in trouble.

Colletotrichum lindemuthianum (Sacc. & Magn.) Briosi & Cav., anthracnose. This is spectacular but except in some upland and cold areas causes very small losses.

Isariopsis griseola Sacc., angular leaf spot. The crop is regularly set before this disease arrives so it probably--as a rule--causes 5% or less loss. It may, however, cause 50-60% losses.

*Since no plant disease surveys have ever been made in Central America to determine, on a systematic basis, the regular losses which go uncontrolled, the data given is based on an opinion poll of workers. It should serve, however, as a basis for discussion even though only an estimate.

Rhizoctonia microsclerotia, web blight. When the weather is right, 100% losses can occur. Regular losses of 5-10% are common occurrence.

Rhizoctonia solani Kuehn, root rot. There has been a tendency to underestimate the importance of this disease as it is so regularly masked by other more serious things. Losses of at least 15% are common and when proper conditions exist they can reach 100%. Other *Rhizoc*s should be watched for. *R. choussii* Crandall has been found on other legume hosts.

Uromyces phaseoli (Pers.) Wint. var. *typica* Arth., II and III rust with 0 & I also occasionally on this host. Regularly the losses are not great but late season (December-January) plantings may have 20% rust. Favored by high humidity and low temperature.

Virus - A complex of diseases now in the process of being straightened out is responsible for regular losses of nearly 50% in many areas. Where infected seed is in common use 100% losses can be found.

3. Sorghum - *Sorghum vulgare* Pers. Estimated yield reduction 30% (forage value 80%).

Helminthosporium turcicum Pass., leaf blight and *Puccinia purpurea* Cke. II & III rust. Regularly these two diseases reduce yields by 20-30% and when the plant is to be used for forage this loss may be 80%.

Spacelotheca sorghi (Lk.) Clint, covered smut. Occasional losses up to 80% are reported but ordinarily this disease is insignificant in effect.

4. Rice - Arroz - *Oryza sativa* L. Estimated yield reduction 20%.

Helminthosporium orizae B. de H., brown spot. On vigorous growing crop loss probably is between 5-10% but may present serious problems for the seed crop when 50-60% of grain may be infected.

Piricularia orizae Cav., blast-rotten neck. On the susceptible varieties (like Gulf Rose) there may be close to 100% loss. Ordinarily it appears late in the crop and causes 2-5% loss.

Rynchosporium orizae Hashioka & Yokogi, leaf blight. Reported to be on the increase. Losses in the past have generally been insignificant but somewhat more recently up to 30% is ported.

Virus - Hoja blanca or white leaf. Regularly takes out 5-10% and where uncontrolled may be 100%. Varieties like Surinam "Nilo" are resistant.

5. Potato - Papa - Solanum tuberosum L. Estimated yield reduction 10-20%.

Alternaria solani (Ell. & G. Martin) Sor., early blight and *Phytophthora investans* (Mont.) deBy., late blight. Troublesome losses from both early and late blight are reported but in general these remain small 2-5%.

Fusarium Spp., dry rot. Regularly reduces yields by 5-15%.

Streptomyces scabies (Thaxt.) Waksman. Under present conditions does not contribute materially to reduction in crop.

Part B - Horticultural Crops

2. Banana - Musa paradisiaca L., 100% loss from "moko" when present.

Xanthomonas solanacearum (E. F. Sm.) Dowson, bacterial wilt or "moko". Uncontrolled, the losses are 100% in the cooking banana called mohoncho or chata.

3. Mango - Mangifera indica L. Estimated yield reduction 30%.

Glomerella cingulata (Ston.) Spauld. & Schrenk, anthracnose and *Oidium mangiferae* Berthet., powdery mildew. These two diseases operate, as a usual thing, together or supplement each other. They account for 20-30% reduction in yield regularly and often much more.

4. Avocado - Aguacate - Persea americana Mill. Estimated yield reduction 30%.

Cercospora purpurea Cke., leaf and fruit spot. Will become significant when an export market develops.

Colletotrichum gloeosporioides Penz., black fruit spot and *Oidium* spp., mildew. These two together probably reduce yield by 30%.

Phytophthora cinnamomi Rands., root rot. When unrecognized and allowed to spread can cause 100% loss.

P. schiedeana Ness. "chucte" is more susceptible than avocado. *P. amplifolia* Ney (a non-edible variety) is resistant.

6. Annona - Cherimoya - Annona cherimola Mill. Estimated yield reduction 25%.

Diplodia natalensis Pole-Evans, fruit rot. Losses range upward 60% and regularly some variable amount.

8. Sweet Orange - Citrus sinensis (L.) Osbeck. Estimated yield reduction 25%.

Diplodia natalensis P. Evans., dieback and aerial gummosis and *Phytophthora parasitica* Dast., gummosis. These two diseases together, mostly because of poor planting and maintenance techniques are causing a 20-30% loss.

Part C - Vegetable Crops

1. Tomato - Tomate - Lycopersicum esculentum Mill. Estimated yield reduction 50%.

Alternaria solani (Ell. & G. Martin) Sor., early blight; *cladosporium fulvum* Cke., leaf mold; *phytophthora infestans* (Mont.) deB., late blight. The first and last of these three more important in cooler zones while *Cladosporium* is more important in hot, humid areas and often confused with the others. As a group cause a reduction of 10-20%.

Virus - a complex not yet worked out. Losses of 50% are of common occurrence with growers not really realizing how big the loss is.

3. Cabbage - Brassica oleraceae L. var. capitata L. Estimated yield reduction 15%.

Xanthomonas campestris (Pam.) Dowson, black rot. Regularly reduces yields by 15%.

4. Pepper - Chile - Capsicum frutescens L. Estimated yield reduction 50%.

Virus - a complex of not well identified or separated viruses depending on the season, especially bad in the dry season losses often reach 80%.

7. Muskmelon cucumis melo L. Estimated yield reduction
Cantaloup C. m. L. var. reticulatus Naud. Loss 50%
Cucumber C. sativus L. Loss 60%
Watermelon citrullus vulgaris Schrad. Loss 60%

Erysiphe cichoracearum DC, powdery mildew and *Pseudoperonospora cubensis* (Berk. & Curt.) Rostow., downy mildew. The two together, the first mostly in the dry season and the latter during the wet season cause from 20 to 60% losses. They are perhaps worse on melons and cucumbers.

Mycosphaerella citrullina (C. O. Sm.) Gross, gummy stem blight. Causing 50% losses on the melon crop.

Virus - several different types. Heavy losses in this group ranging up to 50%. Watermelons in one location had a 60% loss.

Nematodes are not specifically mentioned but are causing reduction in yield of almost every crop in this list. Once the obvious diseases are controlled, there should be serious effort given to reduce losses from this cause.

Market diseases have not been covered in this survey. It seems quite probable that 10-20%, and perhaps more, of most fruits and vegetables are lost through different diseases entering during handling or storage.

Cotton diseases are not summarized, but, considering the economic status of this crop, it appears inadvisable to ignore losses that probably reach 25%.

Coffee diseases are numerous and costly but are insignificant in relation to the potential loss which could occur if the coffee rust, *Hemelia vastatrix*, was introduced and was not immediately noted and eradicated.

Summarized Crop Losses - Without an accurate plant disease survey, recourse to the psychic is required to develop numerical data on the losses from plant diseases. However, such numerical figures have been requested. Those that follow are presented only to enable the delegates attending the next OIRSA meeting to put this problem of what OIRSA should do in perspective.

Projected Losses in Central America

	<u>Actual harvest</u> <u>(Cwt.)</u>	<u>Lost from disease</u> <u>(Cwt.)</u>
Corn	30,949,688	15,474,844
Rice	6,362,928	1,590,732
Beans	3,335,640	3,335,640
Sorghum	4,740,714	2,370,357
	<u>Bales</u>	<u>Bales</u>
Cotton	1,215,000	405,000

Suggested reading: "Losses in Agriculture", Agricultural Handbook No. 291, Agricultural Research Service, U. S. Department of Agriculture, August 1965.

